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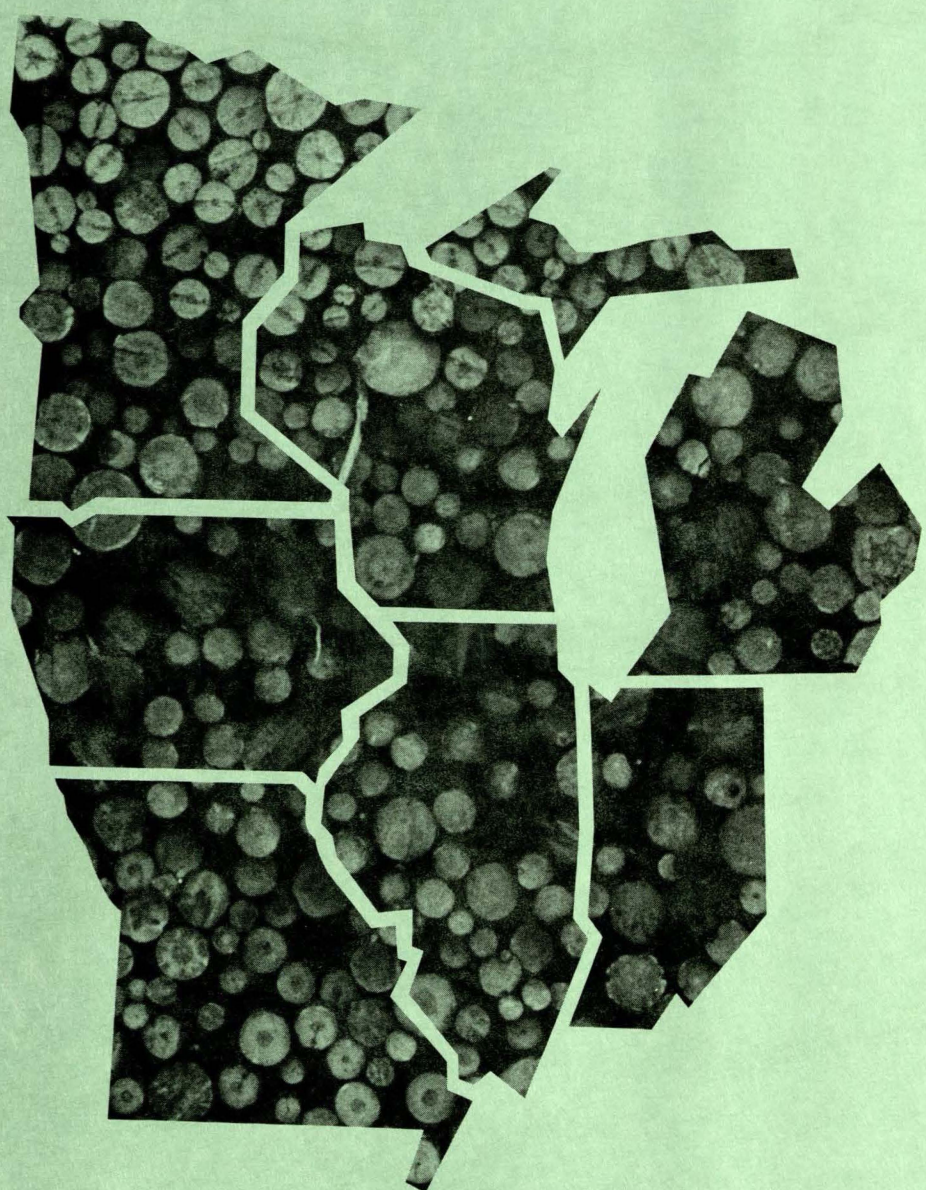
Pulpwood Production in the North-Central Region, 1989

Ronald L. Hackett



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HIGHLIGHTS

NOTE: This report includes all primary products made from reconstituted wood fiber. In addition to wood pulp, this includes particleboard products[1] made from chips, shavings, wafers, flakes, strands, and sawdust. This report presents the production by county of the raw fiber material delivered to mills. Thus, these data report only that portion of the timber harvest used as raw material and do not necessarily reflect the volume of growing stock harvested.

LAKE STATES

- Pulpwood production climbed to a record 8.5 million cords in 1989. Hardwoods constituted 77 percent of total pulpwood production. Aspen remained the dominant hardwood species of roundwood harvested—64 percent of the total.
- Whole-tree chip production dropped slightly to 629 thousand cords—a 4-percent decrease over 1988. Aspen also remained the dominant species for whole-tree chip production.
- Production of pulpwood for pulp mills increased 2 percent from 1988, while production for particleboard mills climbed 14 percent.
- Pulpwood production in Michigan increased 7 percent over 1988's record high. New highs in aspen, balsam fir, spruce, and white birch harvests were reached.
- Wisconsin pulpwood production expanded 3 percent, primarily in aspen.
- Minnesota pulpwood production in 1989 increased 6 percent over 1988. The softwood roundwood harvest in Minnesota increased 11 percent over the 1988 harvest. The white birch harvest of 23 thousand cords was the highest since 1977.
- Softwood residue imports from Canada dropped from 24 thousand cords in 1988 to 14 thousand cords in 1989. Wisconsin mills used 539 thousand cords, and Michigan mills used 296 thousand cords from out-of-State producers.

CENTRAL STATES

- Pulpwood production in the Central States dropped 1 percent from 1988 to 396 thousand cords.
- Hardwood residue from other wood-using plants comprised 68 percent of the total pulpwood production.
- Exports of pulpwood from the Central States increased 7 percent to 254 thousand cords over 1988.
- Central States producers shipped wood to mills in Kentucky, Wisconsin, Oklahoma, and Michigan in 1989.
- Indiana pulpwood production in the Central States in 1989 was 170 thousand cords or 43 percent of total production.
- Receipts of pulpwood at Central States mills declined 11 percent to 144 thousand cords in 1989.
- Three thousand cords of pulpwood were imported to the Central States in 1989—an increase of 700 percent over the 1988 imports of less than 500 cords.

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[1] *Haygreen, John G.; Bowyer, Jim L. 1982. An introduction to forest products and wood science. Ames, IA: The Iowa State University Press. 495 p.*

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Pulpwood Production In The North-Central Region, 1989

Ronald L. Hackett

Pulpwood constitutes more than half the industrial timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri).

Current detailed information about pulpwood production[2] is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and scientific studies.

Since 1979, we have included logs, bolts, and wood residue used in manufacturing flakeboard, waferboard, oriented strand board, and medium density fiberboard in this annual report. Together, these products are called particleboards, and all mills manufacturing these boards will be called particleboard mills in this paper. Wood used at particleboard mills is identical or nearly identical to wood used at pulp mills; therefore, including this wood in our study provides a more accurate estimate of demand for pulpwood-like material.

Particleboard mills were in their infancy before 1979 and used primarily aspen and wood residue. Therefore, including data for these mills does not distort roundwood use trends for other species nor preclude comparing 1989 survey results with those of 1978 and previous years.

Pulp and particleboard mills using North Central States timber in 1989 reported their pulpwood receipts[3] by species group and county of origin. This report presents the results of the survey, analyzes the data, compares results with those of 1988 or earlier years, and discusses trends in pulpwood production and use.

The Lake States and Central States are discussed separately because the timber types in each area are different, the flow of wood between the areas is nominal, and more detailed data on pulpwood production and receipts in the Central States might reveal the operations of individual mills. This is the 31st annual report of the pulpwood harvest in Lake States counties and the 30th annual report of the Central States harvest.

Several mills purchase their pulpwood based on weight rather than volume. Conversion factors used in the Lake States to convert green tons of pulpwood to standard cord equivalents are shown in the Appendix. Conversion factors used in the Central States are shown in footnote 1 of table 4.

Ronald L. Hackett, Research Forester, received a B.S. degree in forest resources from the University of Minnesota. He joined the Forest Service in December 1974, and has been working with the North Central's Forest Inventory and Analysis Unit since.

[2] *Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut, plus the annual wood residue volume produced by sawmills, veneer mills, etc. used for pulp, particleboard, waferboard, oriented strand board, or medium density fiberboard.*

[3] *Pulpwood receipts are the volume of wood received by mills in a specific State or region, regardless of the geographic source.*

Pulpwood production in Minnesota is completely and accurately shown. However, to prevent disclosure of confidential information about softwood pulpwood use by individual companies, the total quantity of softwood pulpwood imports and exports between Minnesota and Canada is not reported. Thus, some Minnesota softwood shipped to Canada is shown as remaining and used in Minnesota, and receipts of Canadian softwood in Minnesota are understated.

LAKE STATES

Production

Pulpwood production climbed to a record 8.5 million cords[4] in 1989 from 8.1 million cords in 1988, a gain of 5 percent (table 1). New highs in output were reached in 7 of the last 10 years. Of each cord produced, 93 percent came from roundwood (including chips from roundwood) and 7 percent came from residue[5] from wood-using plants.

Principal species harvested were aspen (3.9 million cords), jack pine (548 thousand cords), white birch (524 thousand cords), and hard maple (508 thousand cords). Other major species furnishing more than 300 thousand cords were balsam fir, red pine, spruce, and soft maple.

Hardwoods constituted 77 percent of the total pulpwood production. For the third consecutive year, pulpwood from hardwood residue exceeded 450 thousand cords. Hardwood pulpwood residue from the ake States remained near the same level as last year (464 thousand cords). Aspen remained the dominant roundwood harvested—66 percent of the total. White birch (524 thousand cords), hard maple (508 thousand cords), and soft maple (423 thousand cords) were at record production levels in 1989.

Softwood roundwood production reached its highest level with a total of 1.81 million cords. Pulpwood production from softwood residue declined to 167 thousand cords, a decrease of 9 percent. Increases in red pine (347 thousand cords), balsam fir (409 thousand cords), spruce (323 thousand cords), hemlock (86 thousand cords), and cedar (38 thousand cords) offset minor losses in jack pine, white pine, and tamarack.

Whole-tree chip[6] (WTC) production in the Lake States declined 4 percent to 630 thousand cords, about 7 percent of total production. The WTC mix in 1989 contained the same amount of softwoods as the 1988 mix and more aspen but less other hardwoods. Production of WTC by species group and State was:

State	Softwoods	Aspen	Other hardwoods
	(Thousand cords)		
Michigan	68	207	203
Minnesota	2	86	4
Wisconsin	—	56	4

Michigan—Total pulpwood production rose to a record high of 3.1 million cords in 1989, a 7-percent increase over 1988's total of 2.9 million cords. New highs in aspen, balsam fir, spruce, and white birch and cedar output were reached. Declines in jack pine, balsam poplar, and soft maple production were not severe enough to reduce total production. The Western Upper Peninsula Survey Unit had a 14-percent increase in production over 1988. Leading roundwood producing counties statewide were Marquette, Delta, Iron, Menominee, Ontonagon, Dickinson, and Gogebic.

[4] *All references to cords are in standard cords. A standard cord is 128 cubic feet of wood, bark, and air space.*

[5] *Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using mills that is used for pulping and particleboard. Residue includes slabs, edgings, veneer cores, sawdust, woodflour, and chips manufactured from slabs, edgings, and veneer cores.*

[6] *Pulpwood produced from chipping entire trees (all portions of the trees above ground, except the stumps).*

Table 1.- -Production and imports of pulpwood, Lake States, 1989

(In standard cords, unpeeled)

Species and destination	Production by State1/				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S. 2/	Canada	Total imports	
Cedar								
Michigan	37,803	--	--	37,803	--	--	--	37,803
Total	37,803	--	--	37,803	--	--	--	37,803
Balsam fir								
Michigan	127,559	--	1,836	129,395	--	--	--	129,395
Minnesota	405	190,643	15,115	206,163	--	--	--	206,163
Wisconsin	9,750	50	50,350	60,150	--	--	--	60,150
Exported3/	5,473	7,707	--	13,180	--	--	--	--
Total	143,187	198,400	67,301	408,888	--	--	--	395,708
Hemlock								
Michigan	40,028	--	136	40,164	--	--	--	40,164
Wisconsin	2,336	--	43,086	45,422	--	--	--	45,422
Total	42,364	--	43,222	85,586	--	--	--	85,586
Jack pine								
Michigan	133,838	--	--	133,838	--	--	--	133,838
Minnesota	--	85,084	4,620	89,704	--	--	--	89,704
Wisconsin	65,942	8,482	244,468	318,892	--	--	--	318,892
Exported3/	--	5,837	--	5,837	--	--	--	--
Total	199,780	99,403	249,088	548,271	--	--	--	542,434
Red pine								
Michigan	31,115	--	--	31,115	--	--	--	31,115
Minnesota	--	23,177	4,177	27,354	--	--	--	27,354
Wisconsin	7,396	3,808	274,359	285,563	33	--	33	285,596
Exported3/	--	2,583	--	2,583	--	--	--	--
Total	38,511	29,568	278,536	346,615	33	--	33	344,065
White pine								
Michigan	14,426	--	--	14,426	--	--	--	14,426
Minnesota	--	1,536	91	1,627	--	--	--	1,627
Wisconsin	648	--	22,178	22,826	--	--	--	22,826
Exported3/	--	1,045	--	1,045	--	--	--	--
Total	15,074	2,581	22,269	39,924	--	--	--	38,879
Spruce								
Michigan	75,324	--	654	75,978	--	--	--	75,978
Minnesota	1,248	119,426	2,957	123,631	--	--	--	123,631
Wisconsin	28,620	34,178	41,631	104,429	--	--	--	104,429
Exported3/	10,229	9,072	--	19,301	--	--	--	--
Total	115,421	162,676	45,242	323,339	--	--	--	304,038
Tamarack								
Michigan	5,070	--	--	5,070	--	--	--	5,070
Minnesota	--	4,063	--	4,063	--	--	--	4,063
Wisconsin	647	839	4,565	6,051	--	--	--	6,051
Total	5,717	4,902	4,565	15,184	--	--	--	15,184
Total softwood roundwood								
Michigan	465,163	–	2,626	467,789	--	--	--	467,789
Minnesota	1,653	423,929	26,960	452,542	--	--	--	452,542
Wisconsin	115,339	47,357	680,637	843,333	33	--	33	843,366
Exported3/	15,702	26,244	–	41,946	--	--	--	--
Total	597,857	497,530	710,223	1,805,610	33	--	33	1,763,697
Residue, softwood								
Michigan	65,600	--	2,135	67,735	--	--	--	67,735
Minnesota	--	26,839	25,404	52,243	--	--	--	52,243
Wisconsin	13,730	1,094	31,515	46,339	89,648	14,308	103,956	150,295
Exported3/	--	732	--	732	--	--	--	--
Total	79,330	28,665	59,054	167,049	89,648	14,308	103,956	270,273
All softwoods								
Michigan	530,763	–	4,761	535,524	--	--	--	535,524
Minnesota	1,653	450,768	52,364	504,785	--	--	--	504,785
Wisconsin	129,069	48,451	712,152	889,672	89,681	14,308	103,989	993,661
Exported3/	15,702	26,976	–	42,678	--	--	--	--
Total	677,187	526,195	769,277	1,972,659	89,681	14,308	103,989	2,033,970

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by State1/				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S. 2/	Canada	Total imports	
Ash								
Michigan	24,972	--	2,460	27,432	--	--	--	27,432
Wisconsin	3,354	--	63,765	67,119	--	--	--	67,119
Total	28,326	--	66,225	94,551	--	--	--	94,551
Aspen								
Michigan	1,007,198	--	65,438	1,072,636	--	--	--	1,072,636
Minnesota	--	1,562,968	31,959	1,594,927	--	--	--	1,594,927
Wisconsin	96,847	39,644	1,110,535	1,247,026	--	--	--	1,247,026
Exported3/	--	6,988	--	6,988	--	--	--	--
Total	1,104,045	1,609,600	1,207,932	3,921,577	--	--	--	3,914,589
Balsam poplar								
Michigan	31,563	--	51	31,614	--	--	--	31,614
Minnesota	--	47,016	2,246	49,262	--	--	--	49,262
Total	31,563	47,016	2,297	80,876	--	--	--	80,876
Basswood								
Michigan	53,962	--	7,175	61,137	--	--	--	61,137
Wisconsin	543	--	17,604	18,147	--	--	--	18,147
Total	54,505	--	24,779	79,284	--	--	--	79,284
Beech								
Michigan	25,752	--	463	26,215	--	--	--	26,215
Wisconsin	3,670	--	2,859	6,529	--	--	--	6,529
Total	29,422	--	3,322	32,744	--	--	--	32,744
White birch								
Michigan	201,837	2,393	76,004	280,234	--	--	--	280,234
Wisconsin	1,696	21,044	221,315	244,055	--	--	--	244,055
Total	203,533	23,437	297,319	524,289	--	--	--	524,289
Yellow birch								
Michigan	68,722	--	12,946	81,668	--	--	--	81,668
Wisconsin	7,249	--	22,485	29,734	--	--	--	29,734
Total	75,971	--	35,431	111,402	--	--	--	111,402
Cottonwood								
Minnesota	--	59	--	59	--	--	--	59
Total	--	59	--	59	--	--	--	59
Elm								
Michigan	26,104	--	2,429	28,533	--	--	--	28,533
Wisconsin	28	--	19,728	19,756	--	--	--	19,756
Total	26,132	--	22,157	48,289	--	--	--	48,289
Hickory								
Michigan	827	--	--	827	--	--	--	827
Total	827	--	--	827	--	--	--	827
Hard maple								
Michigan	245,590	--	49,734	295,324	--	--	--	295,324
Wisconsin	34,152	--	178,749	212,901	--	--	--	212,901
Total	279,742	--	228,483	508,225	--	--	--	508,225
Soft maple								
Michigan	218,932	--	25,903	244,835	--	--	--	244,835
Minnesota	--	3,675	2,450	6,125	--	--	--	6,125
Wisconsin	13,290	3,186	155,346	171,822	--	--	--	171,822
Total	232,222	6,861	183,699	422,782	--	--	--	422,782
Red Oak								
Michigan	115,704	--	7,080	122,784	--	--	--	122,784
Wisconsin	2,120	--	52,019	54,139	--	--	--	54,139
Total	117,824	--	59,099	176,923	--	--	--	176,923
White oak								
Michigan	45,736	--	--	45,736	--	--	--	45,736
Wisconsin	164	--	15,508	15,672	--	--	--	15,672
Total	45,900	--	15,508	61,408	--	--	--	61,408
Other hardwoods								
Michigan	19,735	--	4,101	23,836	--	--	--	23,836
Wisconsin	4,964	--	8,993	13,957	--	--	--	13,957
Total	24,699	--	13,094	37,793	--	--	--	37,793

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by State1/				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S. 2/	Canada	Total imports	
Total hardwood roundwood								
Michigan	2,086,634	2,393	253,784	2,342,811	--	--	--	2,342,811
Minnesota	--	1,613,718	36,655	1,650,373	--	--	--	1,650,373
Wisconsin	168,077	63,874	1,868,906	2,100,857	--	--	--	2,100,857
Exported3/	--	6,988	--	6,988	--	--	--	--
Total	2,254,711	1,686,973	2,159,345	6,101,029	--	--	--	6,094,041
Residue, hardwoods								
Michigan	160,003	--	13,414	173,417	21,852	--	21,852	195,269
Minnesota	--	45,705	--	45,705	--	--	--	45,705
Wisconsin	21,984	4,000	218,202	244,186	--	--	--	244,186
Exported3/	--	--	881	881	--	--	--	--
Total	181,987	49,705	232,497	464,189	21,852	--	21,852	485,160
All hardwoods								
Michigan	2,246,637	2,393	267,198	2,516,228	21,852	--	21,852	2,538,080
Minnesota	--	1,659,423	36,655	1,696,078	--	--	--	1,696,078
Wisconsin	190,061	67,874	2,087,108	2,345,043	--	--	--	2,345,043
Exported3/	--	6,988	881	7,869	--	--	--	--
Total	2,436,698	1,736,678	2,391,842	6,565,218	21,852	--	21,852	6,579,201
All wood material								
Michigan	2,777,400	2,393	271,959	3,051,752	21,852	--	21,852	3,073,604
Minnesota	1,653	2,110,191	89,019	2,200,863	--	--	--	2,200,863
Wisconsin	319,130	116,325	2,799,260	3,234,715	89,681	14,308	103,989	3,338,704
Exported3/	15,702	33,964	881	50,547	--	--	--	--
Total	3,113,885	2,262,873	3,161,119	8,537,877	111,533	14,308	125,841	8,613,171

1/ Vertical columns of figures under the box heading "Production by States" present the amount of pulpwood cut in each State.

2/ Mostly Western States.

3/ Pulpwood shipped to mills outside of region.

Minnesota—Production in 1989 increased 6 percent to 2.3 million cords and surpassed the 1984 production high of 2.15 million cords. Major gains occurred in the Northern Pine Survey Unit. Softwood roundwood production increased 50 thousand cords (11 percent) over 1988. Aspen increased from 1.5 million cords in 1988 to 1.6 million cords in 1989. White birch production climbed to 23 thousand cords, an increase of 77 percent over 1988. This is the highest production since 1977 for white birch. St. Louis County had the highest total roundwood production with 491 thousand cords, an increase of 16 thousand cords from 1988. Itasca County increased production by 4 percent to 415 thousand cords in 1989. Other counties producing more than 100 thousand cords were Koochiching, Beltrami, Cass, and Lake.

Wisconsin—Production expanded 3 percent to 3.2 million in 1989. The increased production was mainly in aspen—about 3 percent. Increases in aspen output occurred mainly in the Northeast and Central Survey Units. Red pine production of 279 thousand cords topped the previous record high of 264 thousand cords cut in 1988. Other species at peak production in 1989 were white birch (297 thousand cords), hard maple (228 thousand cords), and soft maple (184 thousand cords). Softwood residues for pulpwood provided a new high of 59 thousand cords. Jack pine production declined 13 percent from 1988 to 1989 in the State. The Northeast and Central Survey Units reduced production 27 and 11 percent, respectively. Top-producing counties were Marinette, Bayfield, Sawyer, Oneida, Forest, Langlade, Lincoln, Ashland, Douglas, Price, and Vilas.

In this report, we show the distribution of the harvest in two ways: first, the amount of pulpwood cut relative to the growing-stock volume in each of five major pulpwood species (fig. 1); and, second the amount of pulpwood relative to commercial timberland area (fig. 2). Pulpwood harvesting (80 thousand cords or more) was most intensive in the following areas by species:

Species	State	Survey Unit
Jack pine	Wisconsin	Central
	Michigan	Northern Lower Peninsula
Red pine	Wisconsin	Central
Spruce	Minnesota	Aspen-Birch
Balsam fir	Michigan	Eastern Upper Peninsula
	Minnesota	Aspen-Birch, Northern Pine
Aspen	Minnesota	Aspen-Birch, Northern Pine, Central Hardwood
	Wisconsin	Northeast, Northwest, Central
	Michigan	Eastern Upper Peninsula, Western Upper Peninsula, Northern Lower Peninsula

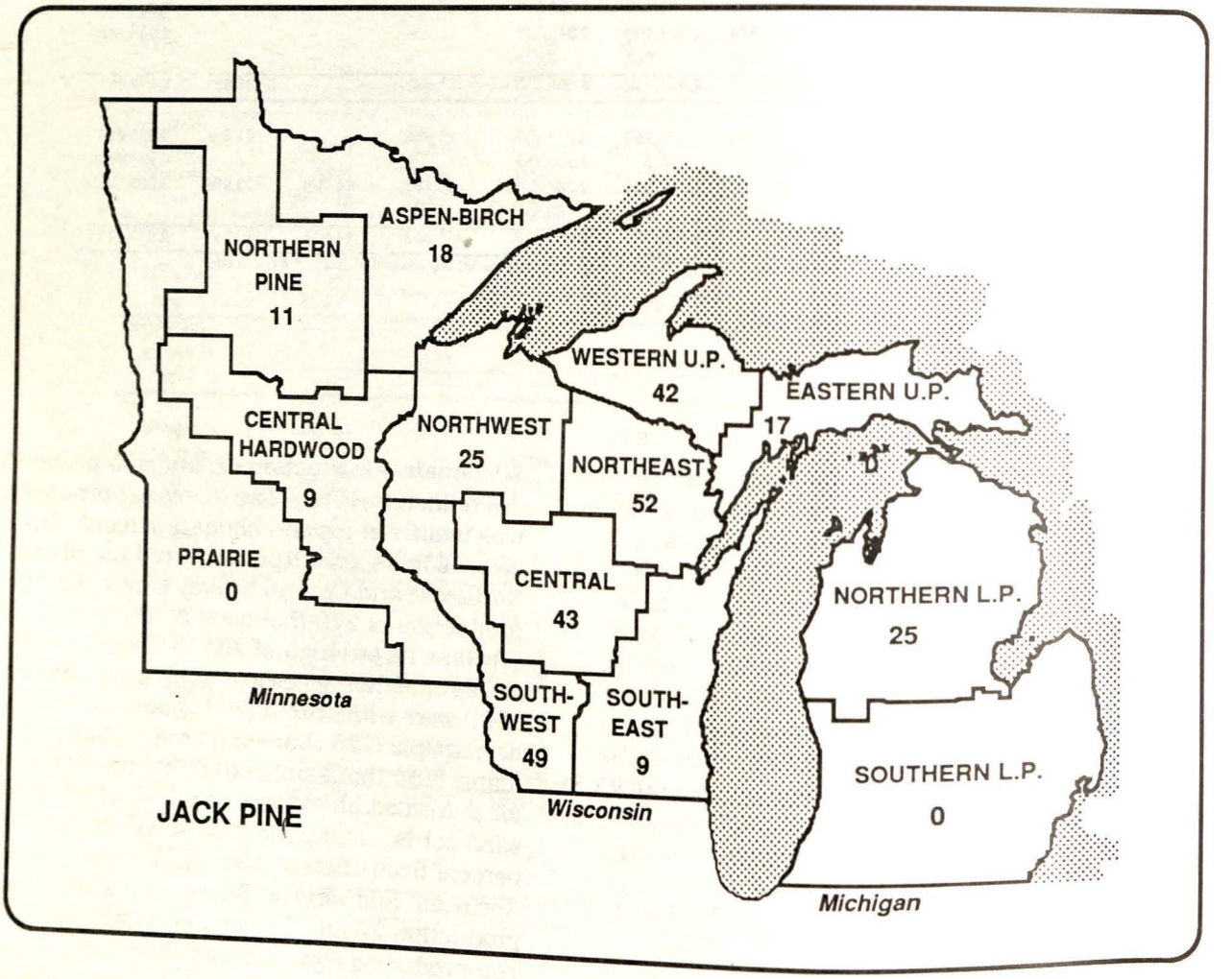
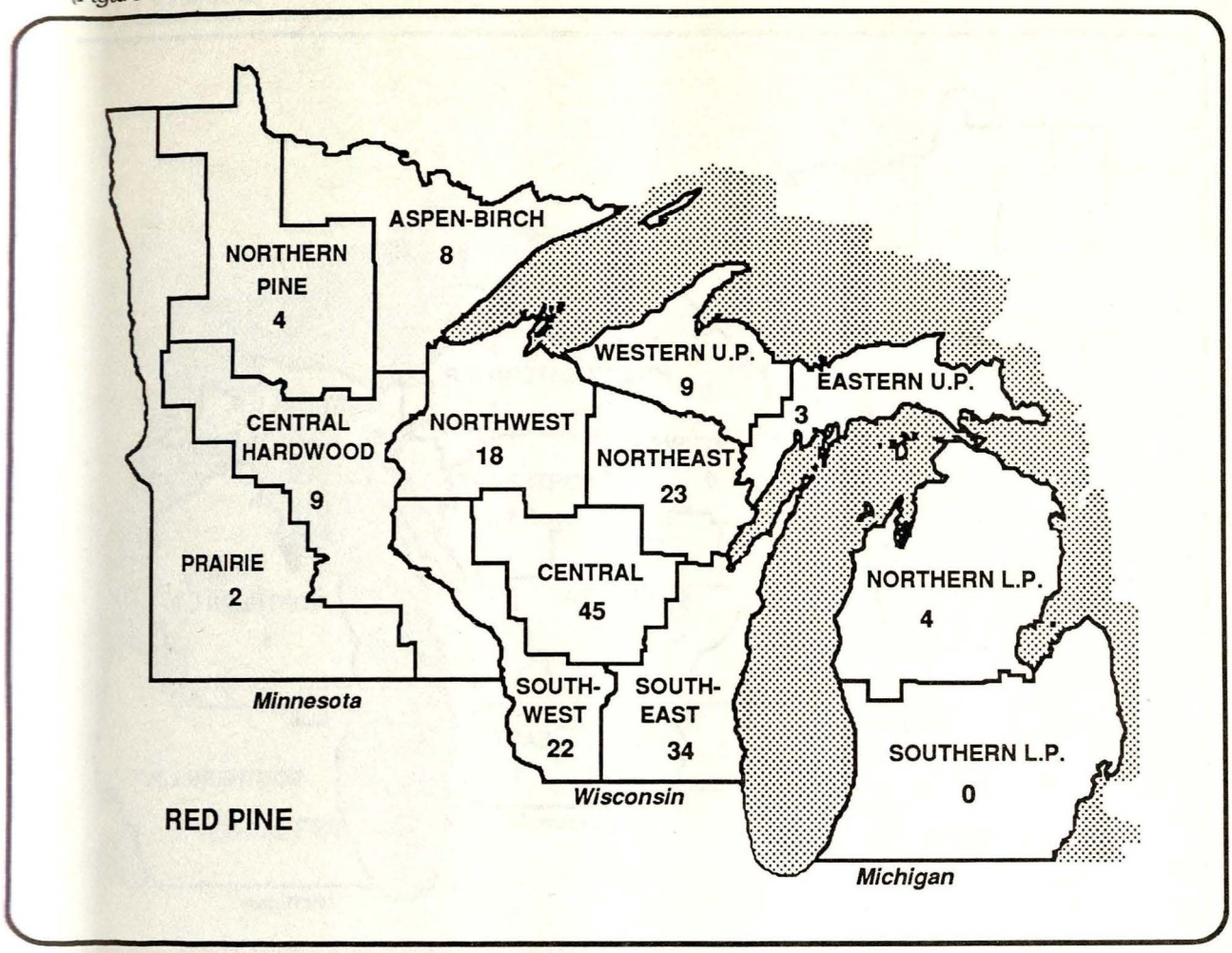


Figure 1.—*Cords of roundwood pulpwood (including chips from roundwood) harvested per 1,000 cords of growing-stock volume for each of five principal pulpwood species by Forest Survey Unit, 1989. Growing-stock volume was determined during the last forest inventory in each State.*

(Figure 1 continued)



Cutting of certain species may exceed net growth in several Survey Units of the Lake States. This difference is probably due to disease and mortality occurring in these species. Harvesting of overmature stands of timber may be another reason. Future field surveys should help clarify these points.

Receipts

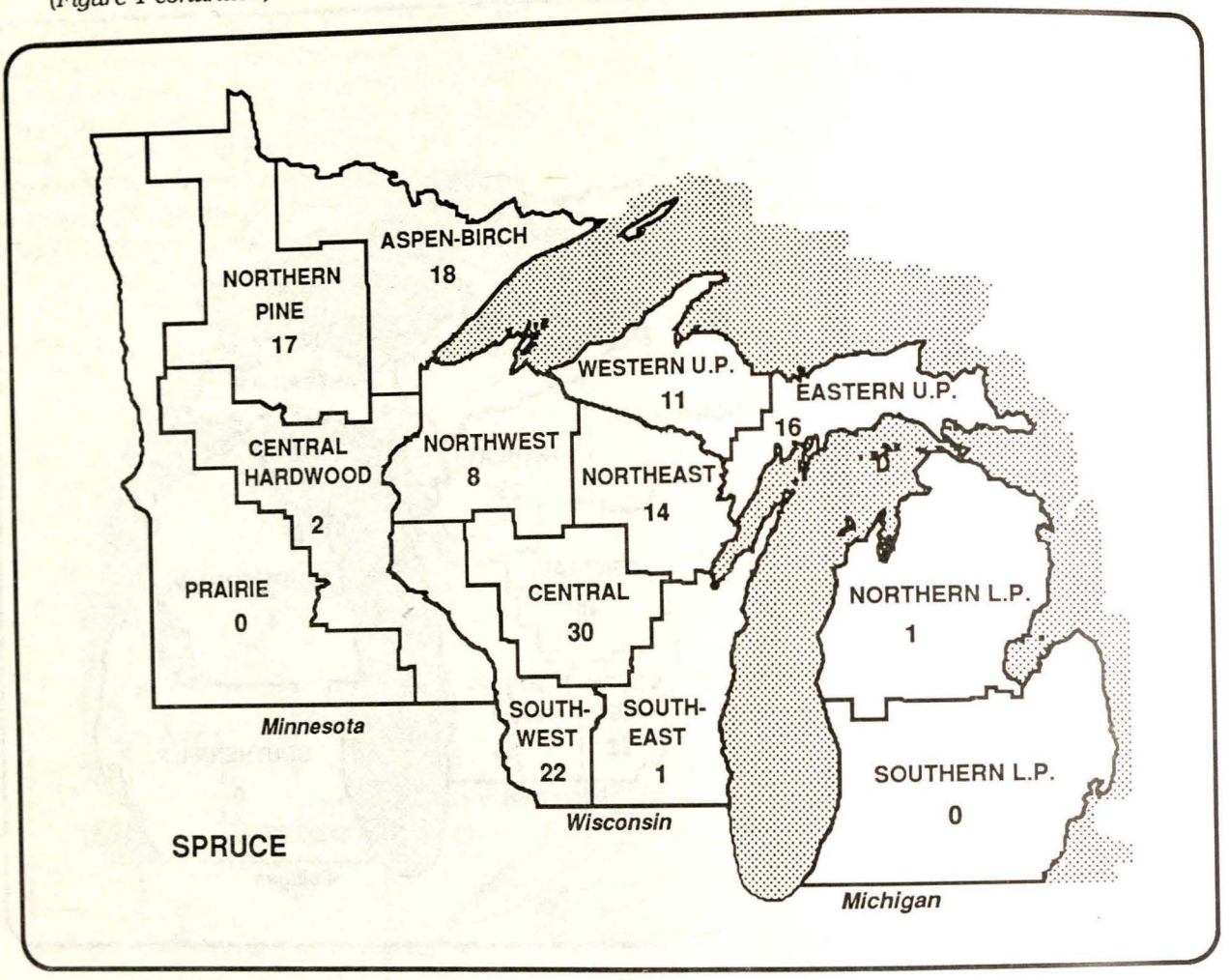
Thirty-six woodpulp and twelve particleboard mills received 8.6 million cords of pulpwood in 1989, up 5 percent from 1988. Of these mills, 40 used aspen, 15 used birch, and 20 used maple (table 2).

The Lake States provide many pulpwood mills with raw material. In 1989, Wisconsin supplied wood to 26 mills, Michigan supplied 25 mills, and Minnesota supplied 25 mills. Pulpwood mills outside the Lake States also received raw material from this region. Some 51 thousand cords were exported, mainly to Canada; Minnesota exported 34 thousand cords, Michigan exported 16 thousand cords, and Wisconsin exported 1 thousand cords.

Softwood residue from Canada dropped 42 percent in 1989 to 14 thousand cords, continuing the decline begun in 1988. Softwood residue imported from other States decreased 12 percent to 90 thousand cords. The main suppliers of the softwood residue from outside the Lake States are South Dakota and Wyoming.

Michigan—Eleven Michigan mills consumed 3.1 million cords. An estimated 296 thousand cords were supplied by out-of-State sources.

(*Figure 1 continued*)



Wisconsin provided more than 90 percent of the imported wood. White birch, hard maple, aspen, red oak, and soft maple were the primary species imported.

Wisconsin—The 22 mills in Wisconsin consumed 3.3 million cords. Of that total, 539 thousand cords were supplied by out-of-State sources. Michigan supplied 319 thousand cords, Minnesota 116 thousand cords, and Canada 14 thousand cords. Principal imports were aspen, spruce, red pine, and white birch.

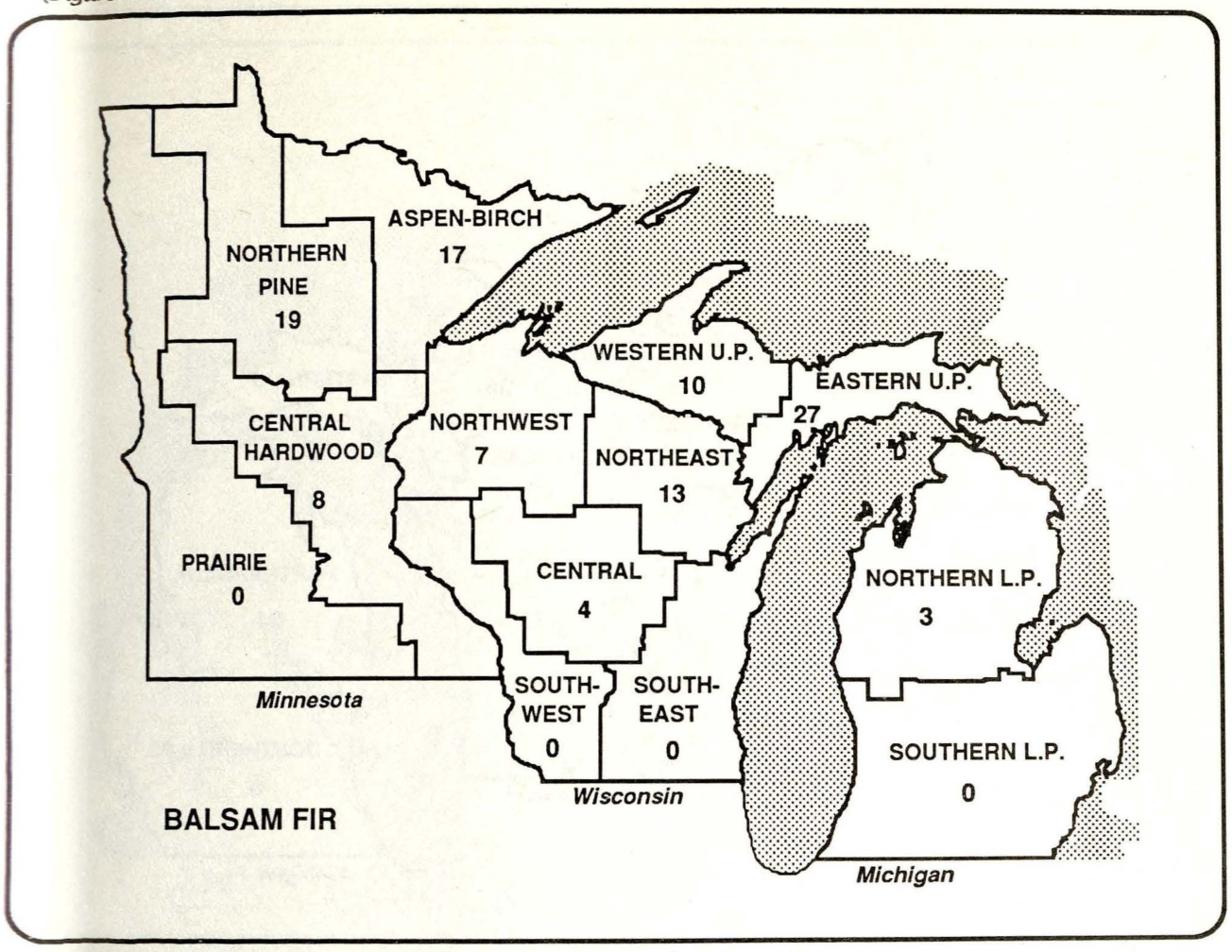
Minnesota—The 15 mills in Minnesota consumed an estimated 2.2 million cords; Minnesota pulpwood receipts are not fully reported (see earlier explanation). Wisconsin supplied 89 thousand cords, and Michigan supplied 2 thousand cords. Principal imports were aspen, balsam fir, spruce, and jack pine.

Industry Trends and Analysis

Pulp mills

Average daily woodpulp production was 12.6 thousand tons per day in 1989 (table 4). Kraft mills accounted for one-third of the total production, and groundwood and other mechanical process mills accounted for another one-third. The remaining one-third was split between sulfite process mills and semi-chemical process mills.

(Figure 1 continued)



Lake States pulpwood production for pulp mills in 1987-1989 was:

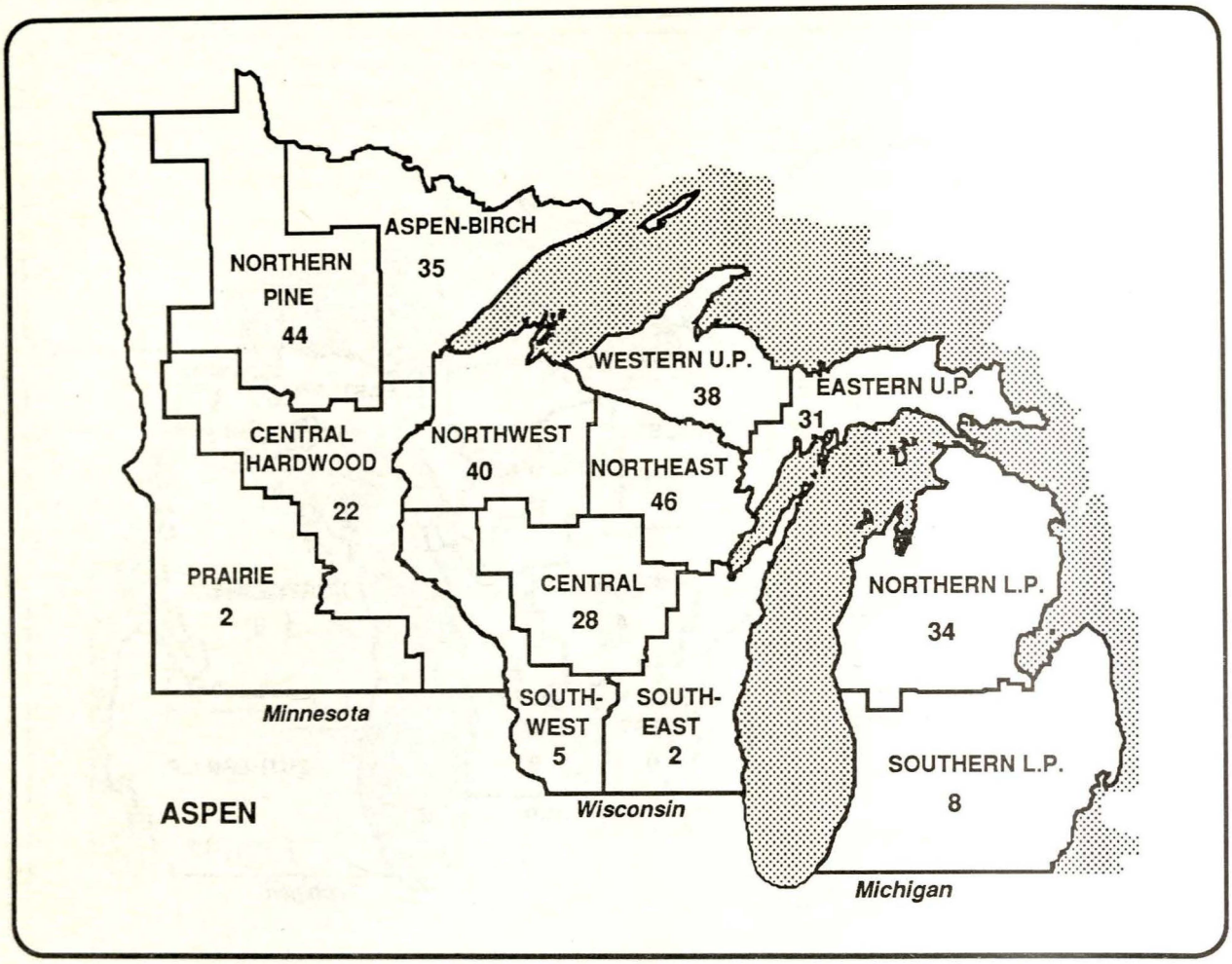
Species	Production		
	1987	1988	1989
	- - - - (Thousand cords) - - - -		
Roundwood			
Aspen	2,030	2,077	2,008
Softwoods	1,395	1,632	1,662
Other species	1,824	1,888	2,090
Residue	524	519	470
Total	5,773	6,116	6,230

A 2-percent increase in pulpwood production for pulpmills in the Lake States during 1989 compares favorably with a less than 0.1 percent rise in U.S. paper and paperboard production that year.

Particleboard mills

Annual production capacity of the Lake States particleboard plants is 1,502 million square feet, as shown on the next page:

(Figure 1 continued)



Company	Location	Production capacity (Million square feet 3/4-inch basis)
Georgia-Pacific	Gaylord, MI	241
Louisiana-Pacific	Newberry, MI	50
Louisiana-Pacific	Sagola, MI	140
Weyerhaeuser Co.	Grayling, MI	170
Louisiana-Pacific	Two Harbors, MN	75
Blandin Wood Products Co.	Grand Rapids, MN	165
Northwood Panelboard Co.	Bemidji, MN	150
Potlatch Corp.	Bemidji, MN	112
Potlatch Corp.	Cook, MN	112
Louisiana-Pacific	Hayward, WI	130
Rodman Industries	Marinette, WI	22
Weyerhaeuser Co.	Marshfield, WI	135
All companies		1,502

Lake States pulpwood production for particleboard mills in 1987-1989 was:

Species	Production		
	1987	1988	1989
	- - - - (Thousand cords) - - - -		
Roundwood			
Aspen	1,542	1,605	1,914
Softwoods	145	135	144
Other species	118	148	89
Residue	116	131	161
Total	1,921	2,019	2,308

Although housing starts dropped 7.6 percent nationally in 1989 to 1.4 million units, Lake States pulpwood production increased by 14 percent because of the strong export and non-housing market for particleboard products.

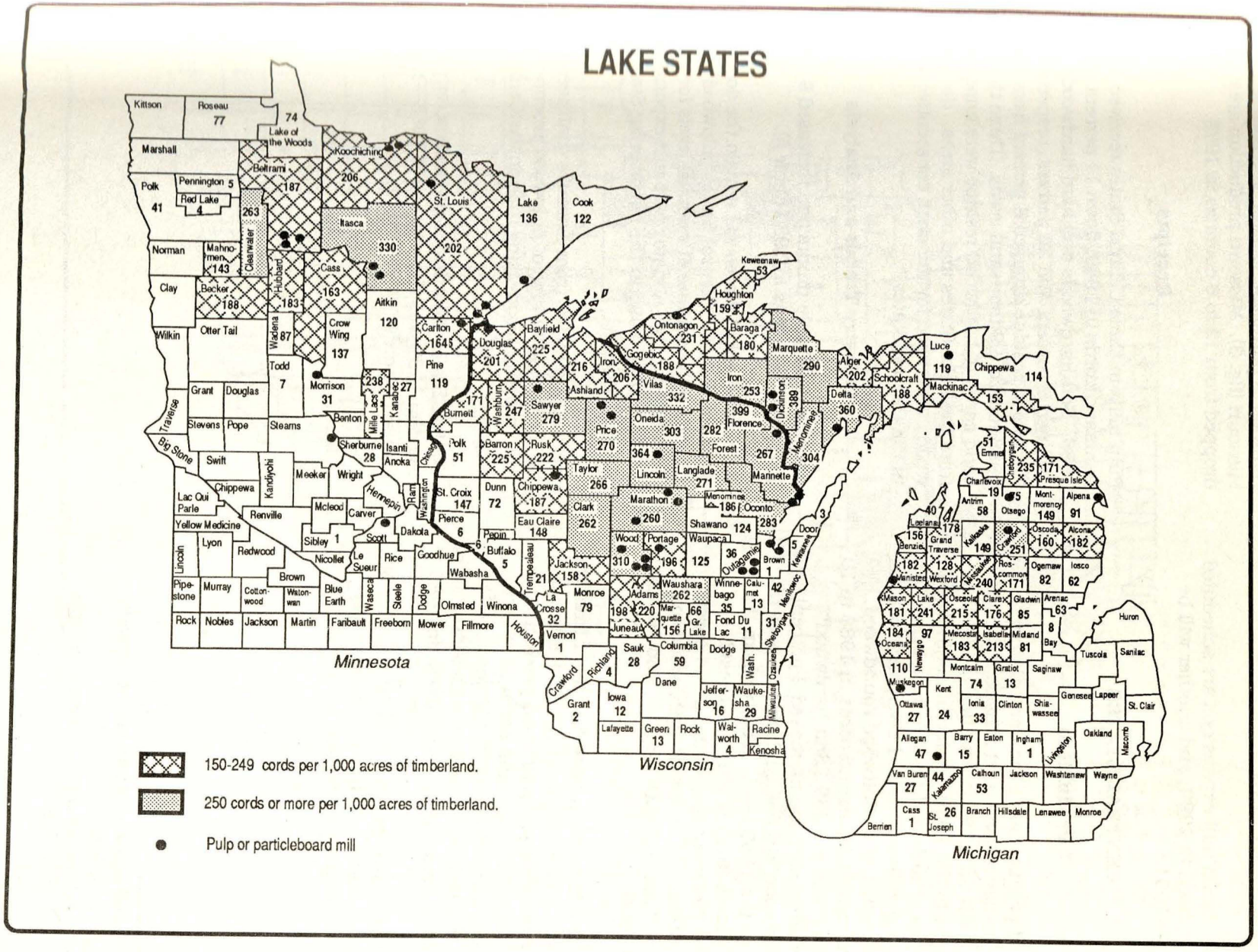


Figure 2.—*Cords of pulpwood cut per 1,000 acres of timberland in principal pulpwood-producing counties, 1989. Acres of timberland (stocking of trees greater than 16.7 percent) were determined during the last inventory in each State. Locations of active pulp and particleboard mills are shown.*

New mills and expansions

Four major pulp mill expansions are scheduled to be completed in 1990, and another will be finished in 1991.

CENTRAL STATES

Production

Pulpwood production in the Central States (Illinois, Indiana, Iowa, and Missouri) dropped 1 percent from the 1988 production of 399 thousand cords to the 1989 production of 396 thousand cords. Hardwood residue from primary wood-using mills comprised 68 percent of total production in 1989. Softwood roundwood dropped from 11 thousand cords in 1988 to 10 thousand cords in 1989. Soft hardwood[7] roundwood production increased 2 percent and hard hardwood[8] decreased 2 percent and remained at the 1988 level. Exports from the Central States (mainly hardwood residue) increased 7 percent to 254 thousand cords. Central States producers shipped wood to Kentucky, Wisconsin, Oklahoma, and Michigan mills in 1989.

Indiana production dropped 5 percent from the 1988 total of 179 thousand cords to 170 thousand cords. Missouri pulpwood production increased from 101 thousand cords in 1988 to 109 thousand cords in 1989. Illinois and Iowa maintained 1988's production with 92 thousand and 25 thousand cords, respectively, in 1989.

Loggers harvested pulpwood in 19 counties of Illinois; 17 counties in western and central Indiana; 9 counties in eastern Iowa; and 6 counties in northeast, central, and southeast Missouri (fig. 3). Missouri production areas dropped from 12 to 6 counties in 1989.

Receipts

Pulp mills in three Central States received 144 thousand cords in 1989, down 11 percent from 1988. Soft hardwoods and hard hardwoods declined 5 percent and 32 percent, respectively. Hardwood residue dropped 8 percent from the 1988 total of 99 thousand cords. Three thousand cords of hardwood residue were imported from the Lake States and other areas. No softwoods were used for the sixth consecutive year in the Central States.

Industry Trends and Analysis

Average daily pulp production increased 9 percent to 510 tons in 1989 (table 5).

Mills in adjacent States will remain the dominant markets for Central States pulpwood, and imports will continue at nominal levels for Central States mills. A major pulp mill expansion is scheduled for 1990 in the neighboring State of Kentucky.

Hardwood residue from sawmills continues to be the dominant type of pulpwood procured from primary wood-using mills in the Central States.

Central States roundwood production for pulpwood in 1989 was the same as in 1988—125 thousand cords.

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[7] *Hardwood species with an average specific gravity of 0.50 or less.*

[8] *Hardwood species with an average specific gravity greater than 0.50.*

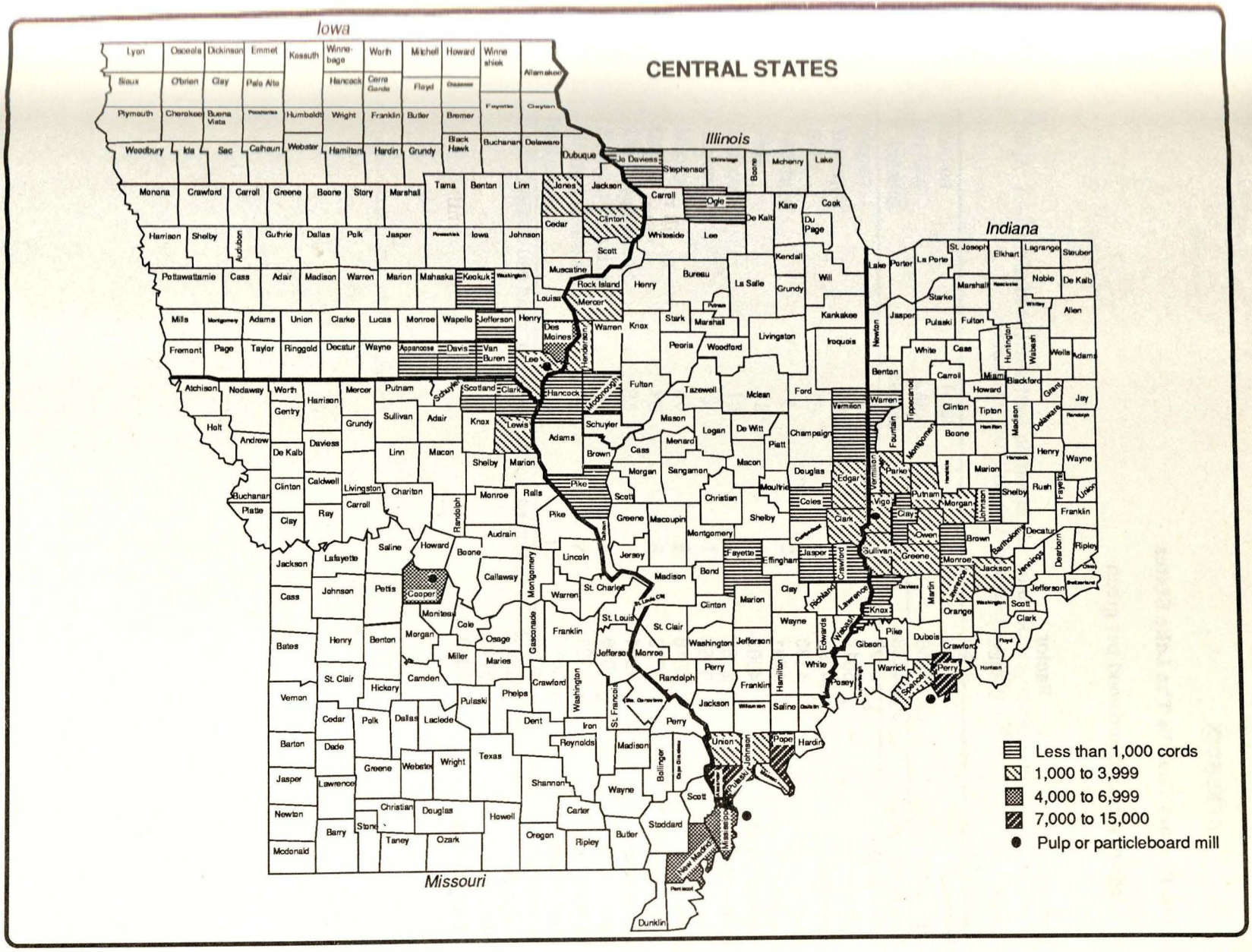


Figure 3.—*Production of pulpwood from roundwood (including chips from roundwood) in the Central States by counties, in standard cords, 1989. Locations of Central States pulp mills and nearby pulp mills using Central States pulpwood are shown.*

APPENDIX

Conversion Factors Used In The Lake States

Standard cords of green roundwood per green ton:

Species	Factor
Cedar	0.6329
Balsam fir	.4688
Hemlock	.4150
Jack pine	.4688
Red pine	.4688
White pine	.4777
Spruce	.5014
Tamarack	.4291
Ash	.4330
Aspen	.4291
Balsam poplar	.4083
Basswood	.5167
Beech	.3956
White birch	.4018
Yellow birch	.3723
Cottonwood	.4291
Elm	.4018
Hickory	.3701
Hard maple	.3617
Soft maple	.4083
Red oak	.3444
White oak	.3723
Other species	.4688

Table 2.--Numbers of industrial plants in the Lake States using a particular species or residue for pulping and particleboard in 1989

Species and kind of material	Total Lake States	State		
		Michigan	Minnesota	Wisconsin
Aspen	40	11	14	15
Balsam fir	13	3	4	6
Birch	15	7	–	8
Hemlock	7	2	–	5
Pine	12	4	3	5
Spruce	13	3	6	4
Tamarack	5	1	1	3
Maple	20	9	1	10
Oak	16	8	–	8
Other hardwoods	23	8	6	9
Softwood residue	9	2	2	5
Hardwood residue	17	7	2	8
Total plants1/	48	11	15	22

1/ Some plants use more than one species, so numbers in column are not additive.

Table 3.- -Average daily production of active woodpulp mills in the Lake States by mill, location, and type of pulp produced, 1989

(In tons per 24 hours) 1/

Company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Michigan						
Abitibi-Price, Inc.	Alpena	400	--	--	400	--
Champion International	Quinnesec	825	--	825	--	--
Stone Container	Ontonagon	575	--	--	--	575
Mead Corp.	Escanaba	1,000	--	800	200	--
Menasha Corp.	Otsego	310	--	--	--	310
Packaging Corp. of America	Filer City	600	--	--	--	600
Warren Co., S.D.	Muskegon	250	--	250	--	--
Total	7 mills	3,960	--	1,875	600	1,485
Minnesota						
Blandin Paper Co.	Grand Rapids	300	--	--	300	--
Lake Superior Paper Industry	Duluth	440	--	--	440	--
Hennepin Paper Co.	Little Falls	75	--	--	75	--
International Bildrite Inc.	International Falls	110	--	--	110	--
Boise Cascade Corp.	International Falls	400	--	400	--	--
Potlatch Corp.	Cloquet	520	--	520	--	--
Superwood Corp.	Bemidji	100	--	--	100	--
Champion International	Sartell	385	--	--	385	--
Superwood Corp.	Duluth	350	--	--	350	--
Certain-Teed Corp.	Shakopee	80	--	--	80	--
Total	10 mills	2,760	--	920	1,840	--
Wisconsin						
James River Corp.	Green Bay	160	160	--	--	--
Weyerhaeuser Co.	Rothschild	200	200	--	--	--
Badger Paper Mills	Peshtigo	120	120	--	--	--
Appleton Papers, Inc.	Combined Locks	200	--	--	200	--
Consolidated Papers, Inc.	Stevens Point	270	--	--	270	--
Consolidated Papers, Inc.	Wisconsin Rapids	1,405	--	850	555	--
Green Bay Packaging, Inc.	Green Bay	220	--	--	--	220
Flambeau Paper Co.	Park Falls	120	120	--	--	--
Midtec Paper Corp.	Kimberly	180	--	--	180	--
Pentair, Inc.	Niagara	210	--	--	210	--
Mosinee Paper Mills Co.	Mosinee	220	--	220	--	--
Nekoosa Papers, Inc.	Nekoosa	335	--	335	--	--
Nekoosa Papers, Inc.	Port Edwards	235	235	--	--	--
Nekoosa Packaging, Inc.	Tomahawk	1,000	--	--	--	1,000
Globe Industries	Cornell	100	--	--	100	--
Superior Fiber Products Corp.	Superior	140	--	--	140	--
Thilmany Pulp and Paper Co.	Kaukauna	420	--	420	--	--
Wausau Paper Mills Co.	Brokaw	210	210	--	--	--
Superwood Corp.	Philips	100	--	--	100	--
Total	19 mills	5,845	1,045	1,825	1,755	1,220
All States	36 mills	12,565	1,045	4,620	4,195	2,705

1/ Lockwood's Directory of the Paper and Allied Industries -- 1990.

Table 4.- -Production and imports of pulpwood, Central States, 1989

(In standard cords, unpeeled)1/

Species and destination	Production by States 2/					Imports			
	Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports	Total receipts
Softwoods									
Exported 3/	10,336	--	--	--	10,336	--	--	--	--
Total	10,336	--	--	--	10,336	--	--	--	--
Soft hardwoods 4/									
Central States 5/	9,692	9,188	10,088	8,826	37,794	--	--	--	37,794
Exported 3/	12,358	--	--	7,227	19,585	--	--	--	--
Total	22,050	9,188	10,088	16,053	57,379	--	--	--	37,794
Hard hardwoods 6/									
Central States 5/	3,343	9,029	1,998	535	14,905	--	--	--	14,905
Exported 3/	25,191	11,535	--	5,302	42,028	--	--	--	--
Total	28,534	20,564	1,998	5,837	56,933	--	--	--	14,905
Total roundwood									
Central States 5/	13,035	18,217	12,086	9,361	52,699	--	--	--	52,699
Exported 3/	47,885	11,535	--	12,529	71,949	--	--	--	--
Total	60,920	29,752	12,086	21,890	124,648	--	--	--	52,699
Residue, softwoods									
Exported 3/	--	--	--	3,684	3,684	--	--	--	--
Total	--	--	--	3,684	3,684	--	--	--	--
Residue, hardwoods									
Central States 5/	18,766	49,681	12,876	8,394	89,717	881	--	881	90,598
Exported 3/	12,609	90,574	--	74,698	177,881	--	2,073	2,073	--
Total	31,375	140,255	12,876	83,092	267,598	881	2,073	2,954	90,598
All wood material									
Central States 5/	31,801	67,898	24,962	17,755	142,416	881	--	881	143,297
Exported 3/	60,494	102,109	--	90,911	253,514	--	2,073	2,073	--
Total	92,295	170,007	24,962	108,666	395,930	881	2,073	2,954	143,297

1/ Factors used in converting to standard green cords (128 cu. ft. including bark and air space) were:

4,266 pounds of softwood roundwood;

4,795 pounds of soft hardwood roundwood;

5,394 pounds of hard hardwood roundwood;

4,100 pounds of softwood chips (green mill residue);

4,400 pounds of hardwood chips (green mill residue);

2,500 pounds of chips (all species, dry mill residue).

2/ Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

3/ Pulpwood shipped to mills outside the region.

4/ Hardwood species with an average specific gravity of 0.50 or less.

5/ Combined to prevent disclosure of individual mill receipts.

6/ Hardwood species with an average specific gravity greater than 0.50.

Table 5.--Average daily production of active woodpulp mills in the Central States by mill, location, and type of pulp produced, 1989

(In tons per 24 hours) 1/

State and company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Illinois						
(No current operations)						
Total	0 mill	--	--	--	--	--
Indiana						
Weston Paper and Mfg. Co.	Terre Haute	300	--	--	--	300
Total	1 mill	300	--	--	--	300
Iowa						
Consolidated Packaging Corp.	Fort Madison	150	--	--	--	150
Total	1 mill	150	--	--	--	150
Missouri						
Huebert Fibreboard, Inc.	Booneville	60	--	--	60	--
Total	1 mill	60	--	--	60	--
All States	3 mills	510	--	--	60	450

1/ Lockwood's Directory of the Paper and Allied Industries - - 1990

Table 6.- -Lake States pulpwood production by State of origin and destination, 1985-1989

(In thousand stand cords, unpeeled)1/

MICHIGAN

Year	Total production	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1985	2,376	--	392	1,972	12
1986	2,808	--	369	2,429	10
1987	2,747	--	313	2,420	14
1988	2,920	2/	311	2,597	12
1989	3,112	2/	319	2,777	16
5-year average	2,793	2/	341	2,439	13

MINNESOTA

Year	Total production	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1985	1,880	1,714	105	--	61
1986	1,979	1,872	69	2/	38
1987	2,079	1,967	61	--	51
1988	2,131	2,002	79	2	48
1989	2,263	2,110	116	2	34
5-year average	2,066	1,933	86	2/	46

WISCONSIN

Year	Total production	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1985	2,588	59	2,465	64	2/
1986	2,926	56	2,693	177	--
1987	2,869	62	2,644	161	2
1988	3,084	80	2,771	233	2/
1989	3,161	89	2,799	272	1
5-year average	2,926	69	2,674	181	2/

1/ Includes mill residues used for pulp.

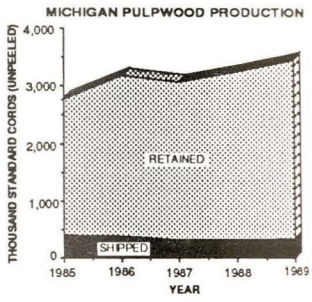
2/ Less than 500 cords.

Table 7.--Lake States pulpwood production by Forest Survey Unit and destination by State, 1989

(In thousand standard cords, unpeeled)

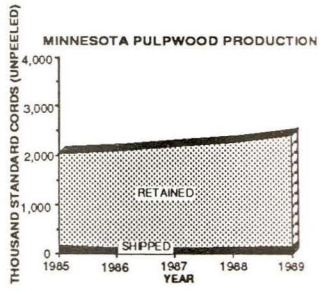
MICHIGAN

Unit	Total production	Destination of pulpwood			
		Michigan	Minnesota	Wisconsin	Other
Roundwood					
Eastern Upper Peninsula	768	673	–	84	11
Western Upper Peninsula	1,045	841	2	199	3
Northern Lower Peninsula	986	984	–	–	2
Southern Lower Peninsula	54	54	–	–	–
Total	2,853	2,552	2	283	16
Residue	262	226	–	36	–
Total pulpwood	3,115	2,778	2	319	16



MINNESOTA

Roundwood					
Aspen-Birch	987	1	887	66	33
Northern Pine	1,107	2	1,085	20	–
Central Hardwood	89	–	63	26	–
Prairie	3	–	3	–	–
Total	2,186	3	2,038	112	33
Residue	79	–	73	5	1
Total pulpwood	2,265	3	2,111	117	34



WISCONSIN

Roundwood					
Northeast	1,091	204	1	886	–
Northwest	1,140	43	63	1,034	–
Central	586	10	–	576	–
Southwest	38	–	–	38	–
Southeast	16	1/	–	16	–
Total	2,871	257	64	2,550	–
Residue	292	16	25	250	1
Total pulpwood	3,163	273	89	2,800	1

1/ Less than 500 cords.

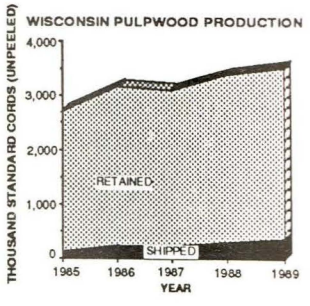


Table 8.- -Lake States annual pulpwood production from roundwood by species, State, and Forest Survey Unit, 1985-1989

(In thousand standard cords, unpeeled)

Unit	All species1/					Pine					Spruce				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
MICHIGAN															
Eastern Upper Peninsula	568	681	711	758	768	101	107	95	93	53	44	50	54	53	66
Western Upper Peninsula	631	866	777	911	1,044	67	66	58	82	70	40	40	41	39	48
Northern Lower Peninsula	953	1,013	978	946	986	146	142	139	123	131	(2/)	3	2	1	1
Southern Lower Peninsula	61	55	52	59	54	(2/)	(2/)	(2/)	(2/)	(2/)	--	--	--	--	--
Total	2,213	2,615	2,518	2,674	2,852	314	315	292	298	254	84	93	97	93	115
MINNESOTA															
Aspen-Birch	782	828	969	922	986	71	74	64	72	66	83	74	82	114	130
Northern Pine	951	965	911	997	1,106	64	60	45	47	63	28	24	19	32	33
Central Hardwood	57	82	83	94	89	3	5	2	2	3	(2/)	(2/)	(2/)	(2/)	(2/)
Prairie	(2/)	1	1	4	3	(2/)	--	--	--	(2/)	--	--	--	--	--
Total	1,790	1,876	1,964	2,017	2,184	138	139	111	121	132	111	98	101	146	163
WISCONSIN															
Northeast	912	1,102	1,044	1,112	1,090	109	137	139	170	149	26	21	24	26	27
Northwest	954	1,017	977	1,078	1,139	123	105	80	114	120	10	9	11	15	16
Central	385	484	513	552	586	182	233	239	250	246	1	1	1	2	2
Southwest	29	17	26	32	38	27	16	23	28	25	(2/)	(2/)	(2/)	(2/)	(2/)
Southeast	15	15	12	20	16	10	9	7	12	10	(2/)	(2/)	(2/)	(2/)	(2/)
Total	2,295	2,635	2,572	2,794	2,869	451	500	488	574	550	37	31	36	43	45
Total Lake States	6,298	7,126	7,054	7,485	7,905	903	954	891	993	936	232	222	234	282	323

1/ Includes a small quantity of cedar not shown elsewhere in the table.

2/ Less than 500 cords.

(Table 8 continued on next page)

(Table 8 continued)

Unit	Balsam fir					Hemlock					Tamarack				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
MICHIGAN															
Eastern Upper Peninsula	49	49	57	75	88	19	24	20	20	23	2	2	2	3	4
Western Upper Peninsula	42	44	38	39	51	18	19	19	15	19	2	2	20	2	2
Northern Lower Peninsula	2	4	3	4	4	--	(2/)	--	(2/)	(2/)	--	--	--	--	--
Southern Lower Peninsula	--	--	--	--	--	--	(2/)	--	--	--	--	--	--	--	--
Total	93	97	98	118	143	37	43	39	35	42	4	4	22	5	6
MINNESOTA															
Aspen-Birch	69	51	61	102	118	--	--	--	--	--	7	13	5	9	2
Northern Pine	53	50	50	68	80	--	--	--	--	--	2	(2/)	3	2	3
Central Hardwood	(2/)	--	1	1	1	--	--	--	--	--	--	--	--	--	--
Prairie	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	122	101	112	171	199	--	--	--	--	--	9	13	8	11	5
WISCONSIN															
Northeastern	59	36	32	39	38	32	31	40	40	36	1	1	1	1	2
Northwestern	12	9	12	31	28	3	5	1	4	5	(2/)	1	1	2	2
Central	--	1	1	1	1	1	1	1	2	2	(2/)	(2/)	(2/)	1	1
Southwestern	1	--	(2/)	(2/)	--	(2/)	--	--	(2/)	--	--	--	--	--	--
Southeastern	--	(2/)	--	(2/)	--	(2/)	(2/)	--	(2/)	--	--	--	--	--	--
Total	72	46	45	71	67	36	37	42	46	43	1	2	2	4	5
Total Lake States	287	244	255	360	409	73	80	81	81	85	14	19	32	20	16

2/ Less than 500 cords.

(Table 8 continued on next page)

(Table 8 continued)

MICHIGAN

Unit	Aspen					Birch					Other hardwoods				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Eastern Upper Peninsula	144	113	114	135	171	41	78	87	106	107	134	225	251	253	233
Western Upper Peninsula	244	252	180	293	364	48	112	106	115	120	154	313	300	316	357
Northern Lower Peninsula	576	599	593	562	553	20	30	35	38	52	209	235	206	218	245
Southern Lower Peninsula	13	15	10	19	16	(2/)	(2/)	(2/)	(2/)	(2/)	48	40	42	40	38
Total	977	979	897	1,009	1,104	109	220	228	259	279	545	813	799	827	873

MINNESOTA

Aspen-Birch	524	575	716	581	616	1	10	12	10	21	27	31	29	34	34
Northern Pine	787	820	784	830	909	1	(2/)	1	2	2	18	11	9	16	17
Central Hardwood	50	73	77	86	81	(2/)	(2/)	(2/)	1	1	3	4	3	4	4
Prairie	--	1	1	4	3	--	--	--	--	--	--	--	--	--	--
Total	1,361	1,469	1,578	1,501	1,609	2	10	13	13	24	48	46	41	54	55

WISCONSIN

Northeast	396	474	369	418	437	82	144	145	151	146	205	258	294	267	254
Northwest	556	567	572	573	573	98	126	122	139	151	153	195	178	200	243
Central	117	162	153	176	184	13	13	19	23	35	71	73	99	97	113
Southwest	1	1	2	3	12	(2/)	(2/)	(2/)	(2/)	1	1	(2/)	1	1	1
Southeast	3	4	1	1	2	(2/)	(2/)	1	1	(2/)	1	2	3	6	4
Total	1,073	1,208	1,097	1,171	1,208	193	283	287	314	333	431	528	575	571	615
Total Lake States	3,411	3,656	3,572	3,681	3,921	304	513	528	586	636	1,024	1,387	1,415	1,452	1,543

2/Less than 500 cords.

Table 9.--Michigan pulpwood production from roundwood by county and species group, 1989

(In standard cords, unpeeled)

Unit and county 1/	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
E. UPPER PENINSULA												
Alger	97,782	1,718	5,898	4,882	5,544	127	648	3,724	233	1,129	12,828	2,126
Chippewa	80,024	1,615	6,108	2,348	9,249	126	615	4,906	217	318	34,943	1,192
Delta	206,806	8,946	30,835	6,493	7,158	1,509	3,376	24,746	1,317	1,274	28,871	6,983
Luce	54,947	2,616	9,183	1,948	3,783	301	987	6,455	355	310	6,522	–
Mackinac	79,327	1,871	7,860	1,555	3,785	2,114	741	7,440	242	448	18,193	2,036
Menominee	149,428	3,764	15,671	2,995	2,217	475	1,421	10,527	722	840	47,674	3,088
Schoolcraft	99,692	3,694	12,558	2,866	6,235	742	1,394	8,181	501	615	21,729	3,124
Total	768,006	24,224	88,113	23,087	37,971	5,394	9,182	65,979	3,587	4,934	170,760	18,549
W. UPPER PENINSULA												
Baraga	91,571	1,039	3,656	2,033	2,215	294	392	2,142	163	1,649	21,961	61
Dickinson	145,605	5,489	19,602	5,114	2,978	2,271	2,071	14,430	744	548	50,984	2,108
Gogebic	115,683	10	1,382	275	6,967	1,487	46	3,434	12	1,780	27,208	–
Houghton	80,605	1,045	3,793	1,135	5,093	264	562	2,864	156	2,215	12,997	22
Iron	164,843	1,391	7,865	2,158	6,731	2,862	887	14,012	411	1,409	72,752	475
Keweenaw	10,922	–	–	–	–	–	–	–	–	150	3,899	–
Marquette	280,173	4,286	14,653	8,323	31,017	441	1,670	10,792	644	2,120	78,951	4,231
Ontonagon	154,821	–	344	149	1,126	488	23	626	–	4,323	95,227	1,893
Total	1,044,223	13,260	51,295	19,187	56,127	8,107	5,651	48,300	2,130	14,194	363,979	8,790
N. LOWER PENINSULA												
Alcona	55,315	–	50	–	8,949	368	–	9	–	327	34,930	1,239
Alpena	18,965	–	22	–	70	39	–	–	–	215	14,211	395
Antrim	8,976	–	–	–	246	1,526	–	–	–	13	4,454	–
Arenac	5,881	–	–	–	108	95	–	–	–	–	5,089	19
Bay	138	–	–	–	–	–	–	–	–	–	138	–
Benzie	18,838	–	–	–	167	333	–	–	–	329	8,426	–
Charlevoix	2,630	–	14	–	53	23	–	–	–	55	963	–
Cheboygan	85,636	213	1,524	60	5,280	374	161	338	–	492	40,908	182
Clare	37,963	–	–	–	694	121	–	–	–	112	29,749	–
Crawford	68,527	94	699	27	24,351	728	71	166	–	75	26,054	–
Emmet	9,878	3	51	1	1,120	190	2	16	–	19	6,860	21
Gladwin	16,143	–	–	–	689	21	–	–	–	173	12,523	–
Grand Traverse	27,035	–	–	–	2,741	2,513	–	–	–	281	13,877	–
Iosco	14,014	–	–	–	843	629	–	–	–	265	8,375	125
Isabella	16,008	–	–	–	–	–	–	–	–	87	15,337	–
Kalkaska	36,653	–	–	–	7,652	4,345	–	–	–	29	19,086	–
Lake	72,197	–	–	–	5,268	716	–	–	–	674	29,386	–
Leelanau	3,021	–	–	–	–	–	–	–	–	208	407	–
Manistee	39,461	–	–	–	213	503	–	–	–	760	18,295	–
Mason	26,455	–	–	–	–	–	–	–	–	73	15,421	–
Mecosta	21,952	–	–	–	9	82	–	–	–	170	17,131	–
Midland	11,926	–	–	–	–	81	–	–	–	434	8,677	176
Missaukee	49,004	–	–	–	743	1,582	–	–	–	499	35,083	110
Montmorency	43,265	9	64	2	2,567	118	7	15	–	118	25,802	339
Newaygo	29,941	–	–	–	61	76	–	–	–	268	19,132	–
Oceana	26,537	–	–	–	–	–	–	–	–	276	17,846	–
Ogemaw	17,810	–	–	–	822	145	–	–	–	72	11,562	23
Osceola	33,822	–	–	–	225	875	–	–	–	643	23,058	–
Oscoda	49,013	–	106	–	15,945	1,313	–	–	–	114	20,928	739
Otsego	19,573	–	–	–	5,115	1,372	–	–	–	62	7,246	–
Presque Isle	45,525	–	1,184	–	3,177	83	–	598	–	712	28,090	850
Roscommon	42,297	–	65	–	17,468	487	–	–	–	7	19,276	6
Wexford	31,852	–	–	–	1,106	6,138	–	–	–	370	14,724	–
Total	986,251	319	3,779	90	105,682	24,876	241	1,142	–	7,932	553,044	4,224
S. LOWER PENINSULA												
Allegan	6,406	–	–	–	–	–	–	–	–	366	416	–
Barry	1,673	–	–	–	–	–	–	–	–	88	235	–
Calhoun	4,018	–	–	–	–	–	–	–	–	–	2,234	–
Cass	78	–	–	–	–	–	–	–	–	–	–	–
Gratiot	351	–	–	–	–	–	–	–	–	–	351	–
Ingham	43	–	–	–	–	–	–	–	–	–	43	–
Ionia	1,216	–	–	–	–	–	–	–	–	23	773	–
Kalamazoo	2,961	–	–	–	–	–	–	–	–	171	169	–
Kent	3,005	–	–	–	–	–	–	–	–	63	1,350	–
Montcalm	10,471	–	–	–	–	19	–	–	–	63	8,384	–
Muskegon	17,535	–	–	–	–	115	–	–	–	214	2,012	–
Ottawa	2,127	–	–	–	–	–	–	–	–	121	140	–
St. Joseph	1,489	–	–	–	–	–	–	–	–	–	–	–
Van Buren	2,715	–	–	–	–	–	–	–	–	157	155	–
Total	54,088	–	–	–	–	134	–	–	–	1,266	16,262	–
State total	2,852,568	37,803	143,187	42,364	199,780	38,511	15,074	115,421	5,717	28,326	1,104,045	31,563

1/ Includes only those counties that supplied pulpwood in 1989.

(Table 9 continued on next page)

(Table 9 continued)

MICHIGAN

Unit and county 1/	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
E. UPPER PENINSULA												
Alger	3,708	1,977	7,181	6,585	–	1,834	–	20,795	12,367	2,628	–	1,850
Chippewa	1,192	1,055	3,130	1,776	–	683	–	5,078	4,595	496	–	382
Delta	5,911	5,512	21,192	9,110	–	3,934	–	19,830	16,036	2,092	8	1,673
Luce	1,567	21	4,389	2,371	–	1,095	–	6,479	5,711	452	–	402
Mackinac	2,004	1,648	9,617	2,951	–	1,201	–	7,302	6,967	769	–	583
Menominee	3,096	2,559	22,544	5,076	–	1,898	–	13,003	9,257	1,454	14	1,133
Schoolcraft	2,829	2,479	6,616	4,412	–	1,821	–	10,117	7,811	1,115	–	853
Total	20,307	15,251	74,669	32,281	–	12,466	–	82,604	62,744	9,006	22	6,876
W. UPPER PENINSULA												
Baraga	2,383	1,080	8,346	5,413	–	994	–	22,729	10,251	2,424	–	2,346
Dickinson	2,256	67	14,214	3,615	–	1,341	–	9,306	6,583	1,097	1	786
Gogebic	4,234	705	4,646	8,042	–	1,273	–	31,460	15,776	4,080	6	2,860
Houghton	2,960	753	6,505	4,544	–	1,436	–	21,159	9,033	2,294	35	1,740
Iron	1,833	909	12,629	4,802	–	747	–	19,411	9,354	2,079	93	2,033
Keweenaw	368	116	845	762	–	260	–	2,443	1,681	158	–	240
Marquette	7,000	3,759	27,617	12,166	–	3,521	–	37,820	23,116	4,780	7	3,259
Ontonagon	6,097	262	2,251	3,707	–	3,190	–	24,057	7,675	2,574	–	809
Total	27,131	7,651	77,053	43,051	–	12,762	–	168,385	83,469	19,486	142	14,073
N. LOWER PENINSULA												
Alcona	99	51	3,888	–	–	–	–	142	2,070	2,903	290	–
Alpena	54	30	2,202	–	–	–	–	76	1,231	378	42	–
Antrim	48	12	431	–	–	–	–	583	1,207	313	143	–
Arenac	–	–	357	–	–	–	–	–	–	109	104	–
Bay	–	–	–	–	–	–	–	–	–	–	–	–
Benzie	416	453	546	11	–	–	–	1,998	2,299	2,192	1,355	313
Charlevoix	144	39	322	20	–	–	–	320	615	62	–	–
Cheboygan	1,273	354	9,922	5	–	–	–	4,473	18,683	1,381	13	–
Clare	–	51	1,109	–	–	–	–	263	1,982	2,319	1,563	–
Crawford	249	102	1,876	–	–	–	–	1,002	3,935	8,733	365	–
Emmet	56	15	545	–	–	–	–	178	801	–	–	–
Gladwin	23	6	833	4	–	–	–	81	982	514	294	–
Grand Traverse	416	426	437	8	–	–	–	1,904	2,967	883	270	312
Iosco	35	23	1,515	4	–	–	–	68	1,159	860	113	–
Isabella	–	7	59	–	–	–	–	11	237	177	93	–
Kalkaska	374	24	581	34	–	–	–	1,502	1,797	901	224	104
Lake	208	305	973	34	–	–	–	1,305	5,286	16,787	11,060	195
Leelanau	268	521	–	104	–	–	–	625	367	417	–	104
Manistee	834	806	1,181	3	–	–	–	3,071	5,127	4,983	2,955	730
Mason	416	429	584	13	–	–	–	2,051	2,205	2,375	2,263	625
Mecosta	208	107	464	15	–	–	–	425	1,276	994	967	104
Midland	5	74	687	10	–	–	–	24	999	497	262	–
Missaukee	417	169	1,406	5	–	–	–	1,600	2,991	2,395	1,483	521
Montmorency	194	30	7,588	13	–	2	–	291	2,390	3,462	250	4
Newaygo	–	115	246	51	–	–	–	256	2,504	4,301	2,931	–
Oceana	–	110	201	64	–	–	–	243	1,712	3,267	2,818	–
Ogemaw	20	11	1,608	4	–	–	–	178	971	1,819	575	–
Osceola	208	328	1,018	159	–	–	–	1,861	2,403	2,241	803	–
Oscoda	114	31	2,689	–	–	–	–	252	1,711	4,721	350	–
Otsego	192	59	1,491	31	–	5	–	852	2,637	501	1	9
Presque Isle	145	116	5,458	–	–	–	–	404	4,008	660	40	–
Roscommon	26	6	494	–	–	–	–	85	1,956	1,796	625	–
Wexford	625	611	1,062	27	–	–	–	1,689	2,049	1,931	791	729
Total	7,067	5,421	51,773	619	–	7	–	27,813	80,557	74,872	33,043	3,750
S. LOWER PENINSULA												
Allegan	–	335	–	–	–	340	313	306	691	1,749	1,890	–
Barry	–	71	–	2	–	60	56	115	194	469	383	–
Calhoun	–	–	–	–	–	–	–	–	223	750	811	–
Cass	–	–	–	–	–	–	–	–	–	34	44	–
Gratiot	–	–	–	–	–	–	–	–	–	–	–	–
Ingham	–	–	–	–	–	–	–	–	–	–	–	–
Ionia	–	41	–	–	–	40	37	15	115	99	73	–
Kalamazoo	–	156	–	–	–	159	146	143	322	815	880	–
Kent	–	37	–	2	–	40	37	80	282	617	497	–
Montcalm	–	12	17	–	–	–	–	9	334	811	822	–
Muskegon	–	193	21	16	–	–	–	39	2,598	6,932	5,395	–
Ottawa	–	111	–	–	–	113	104	102	229	580	627	–
St. Joseph	–	–	–	–	–	–	–	–	169	857	463	–
Van Buren	–	143	–	–	–	145	134	131	295	747	808	–
Total	–	1,099	38	20	–	897	827	940	5,452	14,460	12,693	–
State total	54,505	29,422	203,533	75,971	–	26,132	827	279,742	232,222	117,824	45,900	24,699

1/ Includes only those counties that supplied pulpwood in 1989.

Table 10.--Minnesota pulpwood production from roundwood by county and species group, 1989

(In standard cords, unpeeled)

Unit and county 1/	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
ASPEN-BIRCH												
Carlton	54,444	–	12,135	–	701	653	12	2,701	28	–	29,586	2,746
Cook	65,174	–	10,331	–	4,901	1,537	–	17,118	–	–	31,268	19
Koochiching	260,245	–	28,835	–	11,523	2,975	124	52,987	1,343	–	153,899	8,559
Lake	115,161	–	9,675	–	2,684	1,655	1,072	16,667	131	–	71,528	1,095
St. Louis	491,260	–	56,736	–	28,672	8,705	761	40,443	490	–	329,992	17,154
Total	986,284	–	117,712	–	48,481	15,525	1,969	129,916	1,992	–	616,273	29,573
NORTHERN PINE												
Aitkin	80,699	–	6,813	–	181	125	2	1,448	–	–	65,654	6,118
Becker	59,028	–	1,255	–	299	90	4	238	–	–	56,896	246
Beltrami	146,067	–	12,466	–	6,130	1,691	65	5,754	136	–	119,273	552
Cass	138,647	–	7,426	–	6,554	1,674	52	1,498	–	–	120,874	569
Clearwater	78,786	–	2,275	–	1,385	485	14	1,045	82	–	73,320	180
Crow Wing	50,609	–	607	–	4,145	666	–	208	–	–	44,700	224
Hubbard	73,021	–	499	–	3,125	909	39	474	–	–	67,729	246
Itasca	415,143	–	47,814	–	7,066	2,219	183	19,017	115	–	329,039	6,078
Lake of the Woods	25,284	–	778	–	10,637	2,314	127	2,061	2,577	–	6,751	39
Mahnomen	15,121	–	–	–	–	–	–	–	–	–	15,039	82
Roseau	14,527	–	–	–	9,542	2,065	115	888	–	–	1,901	16
Wadena	9,356	–	128	–	692	178	1	–	–	–	8,305	52
Total	1,106,288	–	80,061	–	49,756	12,416	602	32,631	2,910	–	909,481	14,402
CENTRAL HARDWOOD												
Kanabec	3,461	–	–	–	–	–	–	–	–	–	3,461	–
Mille Lacs	28,783	–	–	–	59	15	–	–	–	–	28,677	32
Morrison	4,472	–	–	–	59	15	–	–	–	–	4,391	7
Pine	49,864	–	627	–	547	440	10	129	–	–	43,631	2,995
Sherburne	1,571	–	–	–	442	1,129	–	–	–	–	–	–
Todd	746	–	–	–	59	15	–	–	–	–	665	7
Total	88,897	–	627	–	1,166	1,614	10	129	–	–	80,825	3,041
PRAIRIE												
Pennington	156	–	–	–	–	–	–	–	–	–	156	–
Polk	2,761	–	–	–	–	–	–	–	–	–	2,761	–
Red Lake	104	–	–	–	–	–	–	–	–	–	104	–
Sibley	13	–	–	–	–	13	–	–	–	–	–	–
Total	3,034	–	–	–	–	13	–	–	–	–	3,021	–
State total	2,184,503	–	198,400	–	99,403	29,568	2,581	162,676	4,902	–	1,609,600	47,016

1/ Includes only those counties that supplied pulpwood in 1989.

(Table 10 continued on next page)

(Table 10 continued)

MINNESOTA

Unit and county 1/	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
ASPEN-BIRCH												
Carlton	–	–	5,000	–	–	–	–	–	882	–	–	–
Cook	–	–	–	–	–	–	–	–	–	–	–	–
Koochiching	–	–	–	–	–	–	–	–	–	–	–	–
Lake	–	–	10,590	–	–	–	–	–	64	–	–	–
St. Louis	–	–	5,251	–	–	–	–	–	3,056	–	–	–
Total	–	–	20,841	–	–	–	–	–	4,002	–	–	–
NORTHERN PINE												
Aitkin	–	–	11	–	–	–	–	–	347	–	–	–
Becker	–	–	–	–	–	–	–	–	–	–	–	–
Beltrami	–	–	–	–	–	–	–	–	–	–	–	–
Cass	–	–	–	–	–	–	–	–	–	–	–	–
Clearwater	–	–	–	–	–	–	–	–	–	–	–	–
Crow Wing	–	–	–	–	59	–	–	–	–	–	–	–
Hubbard	–	–	–	–	–	–	–	–	–	–	–	–
Itasca	–	–	1,668	–	–	–	–	–	1,944	–	–	–
Lake of the Woods	–	–	–	–	–	–	–	–	–	–	–	–
Mahnomen	–	–	–	–	–	–	–	–	–	–	–	–
Roseau	–	–	–	–	–	–	–	–	–	–	–	–
Wadena	–	–	–	–	–	–	–	–	–	–	–	–
Total	–	–	1,679	–	59	–	–	–	2,291	–	–	–
CENTRAL HARDWOOD												
Kanabec	–	–	–	–	–	–	–	–	–	–	–	–
Mille Lacs	–	–	–	–	–	–	–	–	–	–	–	–
Morrison	–	–	–	–	–	–	–	–	–	–	–	–
Pine	–	–	917	–	–	–	–	–	568	–	–	–
Sherburne	–	–	–	–	–	–	–	–	–	–	–	–
Todd	–	–	–	–	–	–	–	–	–	–	–	–
Total	–	–	917	–	–	–	–	–	568	–	–	–
PRAIRIE												
Pennington	–	–	–	–	–	–	–	–	–	–	–	–
Polk	–	–	–	–	–	–	–	–	–	–	–	–
Red Lake	–	–	–	–	–	–	–	–	–	–	–	–
Sibley	–	–	–	–	–	–	–	–	–	–	–	–
Total	–	–	–	–	–	–	–	–	–	–	–	–
State total	–	–	23,437	–	59	–	–	–	6,861	–	–	–

1/ Includes only those counties that supplied pulpwood in 1989.

Table 11.--Wisconsin pulpwood production from roundwood by county and species group, 1989

(In standard cords, unpeeled)

Unit and county1/	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
NORTHEAST												
Florence	95,803	–	5,486	2,830	6,321	3,667	214	4,002	324	1,353	41,605	–
Forest	139,230	–	9,684	2,445	200	12,052	791	6,569	273	5,203	43,011	–
Langlade	101,298	–	3,259	554	3,630	3,230	42	1,013	36	3,025	41,003	–
Lincoln	142,783	–	2,625	2,150	2,488	2,942	392	1,247	403	4,997	80,807	–
Marinette	170,460	–	5,108	19,753	20,641	8,077	1,360	4,603	435	1,400	63,961	–
Menominee	39,140	–	121	5,384	1,418	5,705	402	246	–	846	9,237	–
Oconto	96,628	–	896	142	5,561	14,045	561	77	–	773	45,914	–
Oneida	149,717	–	7,857	1,599	15,931	15,087	1,317	6,551	521	3,164	47,405	–
Shawano	31,392	–	126	331	573	4,877	279	84	10	845	7,845	–
Vilas	123,301	–	2,958	517	8,309	8,246	1,131	2,705	96	1,091	56,535	51
Total	1,089,752	–	38,120	35,705	65,072	77,928	6,489	27,097	2,098	22,697	437,323	51
NORTHWEST												
Ashland	109,035	–	5,966	488	4,398	3,223	48	5,359	389	3,382	44,049	–
Barron	35,105	–	–	–	117	249	23	–	–	320	29,646	–
Bayfield	165,998	–	1,703	14	12,448	5,253	281	198	–	1,529	103,493	1,248
Burnett	52,994	–	17	–	17,179	2,640	132	345	78	249	27,835	–
Douglas	124,325	–	9,508	36	25,484	9,757	125	1,889	82	401	51,000	998
Iron	78,019	–	275	136	10	763	39	57	–	525	49,704	–
Polk	11,371	–	–	–	220	160	–	–	–	66	10,259	–
Price	145,196	–	4,595	1,394	3,614	3,378	161	3,097	660	7,210	57,521	–
Rusk	79,856	–	89	136	202	2,269	165	129	78	4,375	44,808	–
Sawyer	165,320	–	2,708	396	3,331	4,260	728	2,305	99	6,410	81,800	–
Taylor	91,335	–	3,140	2,491	55	6,019	180	2,513	560	4,964	31,146	–
Washburn	80,664	–	359	–	9,133	3,505	452	36	–	2,027	42,059	–
Total	1,139,218	–	28,360	5,091	76,191	41,476	2,334	15,928	1,946	31,458	573,320	2,246
CENTRAL												
Adams	50,486	–	–	–	19,752	21,658	1,817	–	26	184	2,319	–
Chippewa	40,862	–	74	60	2,243	2,286	64	529	95	1,473	22,567	–
Clark	82,336	–	24	11	6,911	2,583	118	89	–	3,158	40,580	–
Eau Claire	22,794	–	–	9	3,128	4,049	166	–	–	176	6,579	–
Jackson	58,466	–	–	11	21,238	11,266	184	163	–	335	12,383	–
Juneau	49,873	–	2	–	25,917	13,479	575	11	18	388	2,365	–
Marathon	91,660	–	582	1,555	2,589	5,326	377	381	111	2,594	48,397	–
Marquette	14,347	–	–	–	1,773	7,549	953	30	26	369	487	–
Monroe	18,839	–	–	–	6,414	6,920	522	–	44	404	179	–
Portage	33,782	–	80	467	2,869	12,076	1,039	48	25	745	8,581	–
Waupaca	21,675	–	59	176	373	8,291	881	83	124	646	5,747	–
Waushara	37,495	–	–	–	3,595	27,769	2,433	386	47	143	815	–
Wood	63,807	–	–	137	6,320	8,981	1,254	134	5	988	32,589	–
Total	586,422	–	821	2,426	103,122	132,233	10,383	1,854	521	11,603	183,588	–
SOUTHWEST												
Buffalo	953	–	–	–	29	690	234	–	–	–	–	–
Crawford	21	–	–	–	–	21	–	–	–	–	–	–
Dunn	12,245	–	–	–	2,474	4,062	69	–	–	44	5,002	–
Grant	442	–	–	–	–	374	57	–	–	2	–	–
Iowa	1,552	–	–	–	24	1,248	280	–	–	–	–	–
La Crosse	3,889	–	–	–	1,202	2,055	239	9	–	8	246	–
Pepin	331	–	–	–	–	271	60	–	–	–	–	–
Pierce	603	–	–	–	–	214	–	195	–	15	56	–
Richland	593	–	–	–	28	493	26	–	–	2	–	–
St. Croix	9,376	–	–	–	43	2,604	49	–	–	–	6,642	–
Sauk	5,015	–	–	–	479	4,106	214	–	–	10	–	–
Trempealeau	2,953	–	–	–	120	2,076	482	27	–	26	–	–
Vernon	293	–	–	–	–	199	–	94	–	–	–	–
Total	38,266	–	–	–	4,399	18,413	1,710	325	–	107	11,946	–
SOUTHEAST												
Brown	48	–	–	–	–	13	–	–	–	1	–	–
Calumet	316	–	–	–	10	39	–	–	–	25	–	–
Columbia	4,985	–	–	–	46	3,970	549	–	–	26	–	–
Door	291	–	–	–	–	–	–	–	–	9	198	–
Fond Du Lac	368	–	–	–	25	290	15	38	–	–	–	–
Green	397	–	–	–	90	296	11	–	–	–	–	–
Green Lake	1,388	–	–	–	32	1,092	254	–	–	2	–	–
Jefferson	464	–	–	–	13	435	–	–	–	1	–	–
Kewaunee	202	–	–	–	–	24	7	–	–	5	–	–
Manitowoc	2,341	–	–	–	9	24	63	–	–	200	243	–
Outagamie	2,466	–	–	–	24	284	124	–	–	67	1,314	–
Ozaukee	13	–	–	–	–	13	–	–	–	–	–	–
Sheboygan	1,591	–	–	–	10	1,212	142	–	–	23	–	–
Walworth	126	–	–	–	–	27	99	–	–	–	–	–
Waukesha	914	–	–	–	45	767	89	–	–	1	–	–
Total	15,910	–	–	–	304	8,486	1,353	38	–	360	1,755	–
State total	2,869,568	–	67,301	43,222	249,088	278,536	22,269	45,242	4,565	66,225	1,207,932	2,297

1/ Includes only those counties that supplied pulpwood in 1989.

(Table 11 continued on next page.)

(Table 11 continued)

WISCONSIN

Unit and county 1/	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
NORTHEAST												
Florence	953	189	8,844	2,006	–	300	–	9,817	5,821	1,192	234	645
Forest	2,018	241	14,612	2,773	–	2,383	–	20,779	12,122	2,260	1,206	608
Langlade	2,276	105	10,927	2,289	–	851	–	17,045	8,369	1,898	589	1,157
Lincoln	1,579	23	10,147	1,705	–	1,987	–	14,195	11,130	2,803	236	927
Marinette	493	714	22,145	2,288	–	179	–	11,219	5,761	1,000	163	1,160
Menominee	131	680	1,145	1,613	–	1,361	–	6,326	3,538	394	15	578
Oconto	954	175	9,685	2,039	–	433	–	8,665	5,041	996	16	655
Oneida	933	13	23,509	1,302	–	388	–	10,602	8,804	3,654	759	321
Shawano	480	156	3,071	1,250	–	159	–	6,199	4,146	545	43	373
Vilas	1,036	76	22,530	1,633	–	583	–	8,926	4,587	1,593	241	457
Total	10,853	2,372	126,615	18,898	–	8,624	–	113,773	69,319	16,335	3,502	6,881
NORTHWEST												
Ashland	1,241	85	12,121	2,146	–	989	–	13,757	8,266	1,798	810	520
Barron	13	–	2,563	–	–	–	–	175	316	1,045	578	60
Bayfield	396	75	21,386	904	–	179	–	6,479	7,149	2,660	356	247
Burnett	8	–	2,604	17	–	4	–	253	667	763	171	32
Douglas	117	8	17,926	254	–	46	–	1,172	5,153	280	20	69
Iron	1,794	82	8,148	1,807	–	287	–	8,595	4,265	966	14	552
Polk	–	–	159	–	–	–	–	32	78	286	104	7
Price	2,525	159	18,419	2,340	–	2,136	–	17,952	15,032	2,721	840	1,442
Rusk	936	1	8,314	492	–	841	–	6,747	5,141	3,895	765	473
Sawyer	1,507	19	25,453	2,666	–	583	–	14,719	11,639	4,949	1,398	350
Taylor	1,244	2	9,586	1,120	–	1,747	–	10,264	14,423	1,332	485	64
Washburn	65	–	12,634	187	–	44	–	1,986	3,268	3,674	1,053	182
Total	9,846	431	139,313	11,933	–	6,856	–	82,131	75,397	24,369	6,594	3,998
CENTRAL												
Adams	20	6	434	44	–	41	–	734	471	2,575	349	56
Chippewa	196	–	3,985	221	–	147	–	2,585	2,247	1,442	602	46
Clark	206	78	7,567	666	–	1,624	–	6,015	9,503	1,818	982	403
Eau Claire	21	12	5,061	33	–	227	–	509	1,443	988	252	141
Jackson	42	2	2,668	89	–	142	–	1,020	4,728	3,172	706	317
Juneau	32	3	1,133	71	–	141	–	893	1,334	2,801	557	153
Marathon	2,163	157	3,122	1,978	–	3,969	–	9,023	7,570	1,087	218	461
Marquette	45	–	923	90	–	24	–	1,023	718	196	132	9
Monroe	21	18	1,083	74	–	141	–	751	1,003	923	202	140
Portage	84	109	1,602	360	–	52	–	2,649	1,862	661	253	220
Waupaca	49	51	348	330	–	10	–	1,912	1,942	463	86	104
Waushara	5	39	170	107	–	11	–	638	449	558	270	60
Wood	1,166	16	2,584	278	–	120	–	2,856	4,063	1,543	715	58
Total	4,050	491	30,680	4,341	–	6,649	–	30,608	37,333	18,227	5,324	2,168
SOUTHWEST												
Buffalo	–	–	–	–	–	–	–	–	–	–	–	–
Crawford	–	–	–	–	–	–	–	–	–	–	–	–
Dunn	12	–	331	13	–	8	–	114	90	16	10	–
Grant	–	–	5	–	–	3	–	1	–	–	–	–
Iowa	–	–	–	–	–	–	–	–	–	–	–	–
La Crosse	1	–	32	2	–	9	–	53	17	8	5	3
Pepin	–	–	–	–	–	–	–	–	–	–	–	–
Pierce	2	–	36	3	–	1	–	41	28	6	5	1
Richland	–	3	–	5	–	–	–	23	8	1	–	4
St. Croix	–	–	–	–	–	–	–	29	6	3	–	–
Sauk	–	12	6	22	–	–	–	104	40	7	–	15
Trempealeau	3	–	67	6	–	1	–	74	51	11	8	1
Vernon	–	–	–	–	–	–	–	–	–	–	–	–
Total	18	15	477	51	–	22	–	439	240	52	28	24
SOUTHEAST												
Brown	–	2	–	4	–	–	–	18	6	1	–	3
Calumet	–	2	11	15	–	–	–	110	100	1	–	3
Columbia	3	3	61	11	–	1	–	92	56	103	60	4
Door	–	–	4	4	–	–	–	38	38	–	–	–
Fond Du Lac	–	–	–	–	–	–	–	–	–	–	–	–
Green	–	–	–	–	–	–	–	–	–	–	–	–
Green Lake	–	–	5	–	–	2	–	1	–	–	–	–
Jefferson	–	1	–	2	–	–	–	8	3	–	–	1
Kewaunee	9	–	9	19	–	3	–	72	40	9	–	5
Manitowoc	–	–	100	100	–	–	–	801	801	–	–	–
Outagamie	–	5	32	41	–	–	–	296	270	2	–	7
Ozaukee	–	–	–	–	–	–	–	–	–	–	–	–
Sheboygan	–	–	11	11	–	–	–	91	91	–	–	–
Walworth	–	–	–	–	–	–	–	–	–	–	–	–
Waukesha	–	–	1	1	–	–	–	5	5	–	–	–
Total	12	13	234	208	–	6	–	1,532	1,410	116	60	23
State total	24,779	3,322	297,319	35,431	–	22,157	–	228,483	183,699	59,099	15,508	13,094

1/ Includes only those counties that supplied pulpwood in 1989.

Table 12.--Central States pulpwood production by State and destination, 1985-1989

(In thousand standard cords, unpeeled)

Year	Illinois			Indiana			Iowa			Missouri		
		Destination			Destination			Destination			Destination	
	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States
1985	68	25	43	224	68	156	19	13	6	91	27	64
1986	69	30	39	153	64	89	21	17	4	87	26	61
1987	91	35	56	178	76	102	23	23	--	111	29	82
1988	92	38	55	179	73	106	26	26	--	101	24	78
1989	92	32	60	170	68	102	25	25	--	109	18	91

Table 13.- -Trends in receipts of roundwood and residue as pulpwood, Central States, 1985-1989

(In thousand standard cords, unpeeled)

Type of material and area	1985	1986	1987	1988	1989
Roundwood					
Illinois	–	–	–	–	–
Indiana, Iowa, Missouri	63	57	67	62	53
Total	63	57	67	62	53
Residue					
Illinois	–	–	–	–	–
Indiana, Iowa, Missouri	73	81	98	99	91
Total	73	81	98	99	91
All material	136	138	165	161	144

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Hackett, Ronald L.
1991. **Pulpwood production in the North-Central Region, 1989.** Resour. Bull. NC-134. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 30 p.

Discusses 1989 production and receipts and recent production for other years in the Lake and Central States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1989 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows four production classes by county.

KEY WORDS: Roundwood, whole-tree chips, residue, Minnesota, Michigan, Wisconsin, Illinois, Iowa, Indiana, Missouri.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.